

Lexium™ Integrated Drives Motion control

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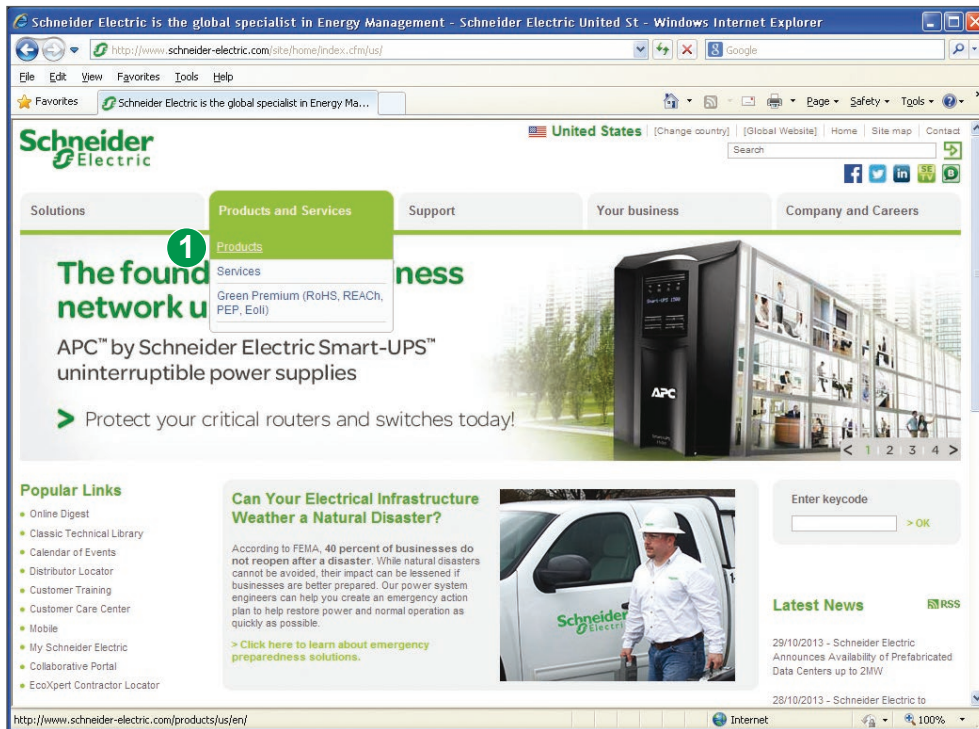
Lexium™ Integrated Drives Motion control

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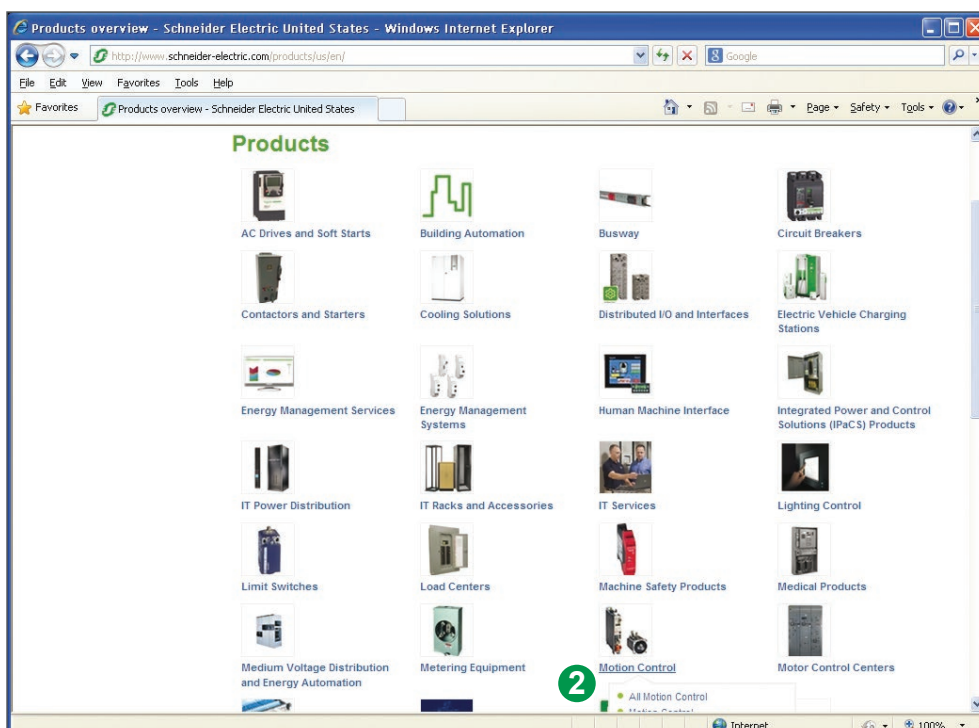


Go online to www.schneider-electric.com for information about Lexium™ products listed in this catalog, including:

- 1 Go to: www.schneider-electric.com and select **“Products”** on the **“Products and Services”** tab.



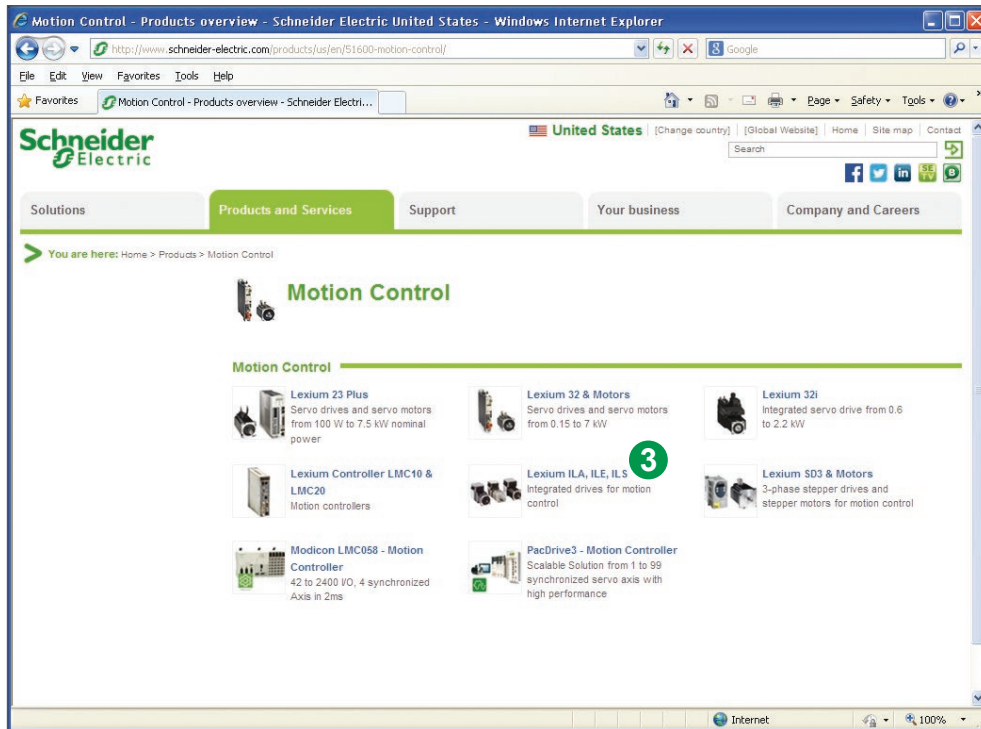
- 2 On the **“Products”** page, find the **“Motion Control”** icon and select **“All Motion Control”**.



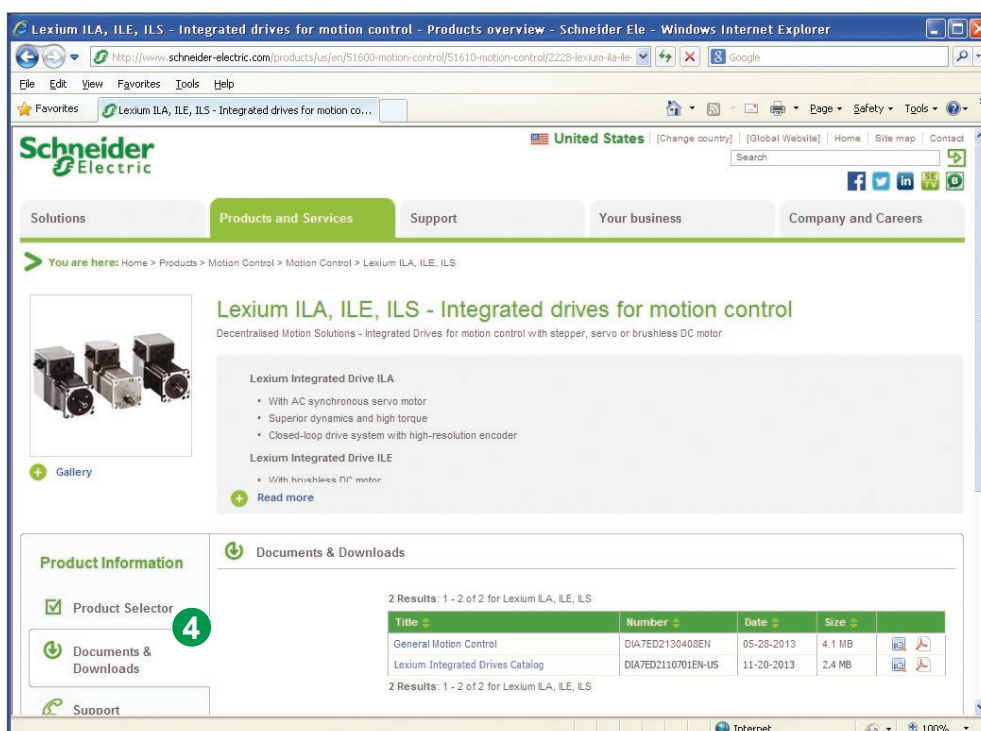
> Specifications > Dimensions > References
> Curves > Links to user guides and CAD files

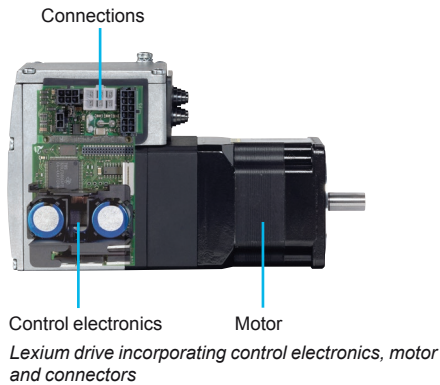


3 On the “Motion Control” page, select “Lexium ILA, ILE, ILS”.



4 Explore the Lexium ILA, ILE, ILS product page, including the “Product Information” tabs: “Documents & Downloads” and “Support”.





Overview

Lexium™ Integrated Drives are used to create decentralized motion control solutions in very compact units.

These drives consist of a motor and control electronics. They are controlled via a communication bus, a pulse/direction (P/D) interface or an I/O interface (for the “Motion sequence” operating mode).

Lexium Integrated Drives are used as decentralized drives in machine building. When combined with a Schneider Electric Lexium Controller or a PLC, they can be used to create complex control system architectures simply and at minimum cost. Ready-to-use function blocks are available for programming movements with Schneider Electric or third-party motion controllers.

Compact design

Lexium motor and control electronics form a compact unit. This decentralized unit does not require any space in the enclosure for the control electronics, thus reducing the size of the machine.

Simple to install and commission

Integration of the motor and the control electronics reduces installation costs and simplifies incorporation of electromagnetic compatibility. In addition, Lexium CT PC software enables rapid commissioning.

Optimum flexibility to adapt to your application

Lexium Integrated Drives can be equipped with an AC synchronous servo motor, a DC brushless motor or a stepper motor, providing multiple options for use in a wide variety of applications.

Depending on the technology used, these drives can meet requirements for dynamic performance, flexibility or precision in motion control applications.

Open communication with control system architectures

Depending on the model, Lexium Integrated Drives incorporate as standard the main communication protocols used in industry for increased performance of your applications:

- CANopen, PROFIBUS DP, DeviceNet, EtherCAT, EtherNet/IP, Ethernet POWERLINK™ and Modbus TCP communication buses and networks
- RS 485 serial link

Lexium Integrated Drives with stepper motor are also available with a pulse/direction (P/D) interface or an I/O interface for the motion sequence.

This open communication concept enables integration in numerous control system architectures.

Integrated safety

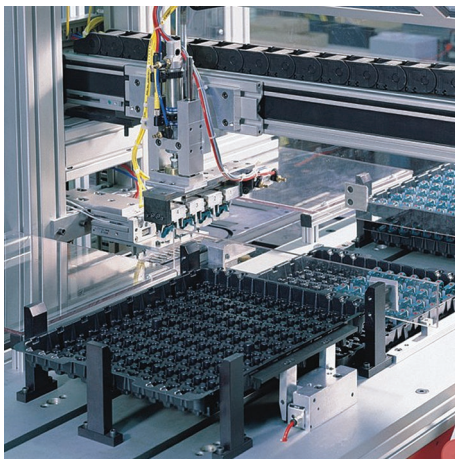
The integrated Safe Torque Off (Power Removal) safety function enables a category 0 or 1 stop to be performed in accordance with standard IEC/EN 60204-1 without external power protection devices.

The integrated drive does not have to be switched off, which reduces the system costs and restart times. This drive complies with the requirements of the following standards: IEC/EN 61508 SIL2, ISO 13849-1 performance level “d” (PL d) and IEC/EN 61800-5-2 (STO).

Applications

Lexium Integrated Drives are suitable for the most common applications, including:

- Packaging
- Material handling, labelling
- Textiles
- Printing
- Electronic components
- Medical technology



Material handling application



Labelling application

Lexium™ Integrated Drives Motion control

Lexium CT commissioning software

Overview (continued)

Commissioning time for Lexium Integrated Drives is reduced considerably using the Lexium CT (Lexium Commissioning Tool) PC software.

This software is used for commissioning, parameter setting, simulation and diagnostics.

Functions

Lexium CT PC software includes the following functions:

- Entry and display of parameters
- Archiving and duplication of parameters
- Display of status information
- Positioning of the motor via the PC
- Initiation of homing movements
- Access to all documented parameters
- Fault diagnostics
- Controller optimization (for ILA integrated drive)

Required configuration

Lexium CT software runs on a PC with the Microsoft Windows® 2000/XP/Vista operating systems. The integrated drive is commissioned via the communication interface.

Download

Lexium CT software can be downloaded from our website:
www.schneider-electric.com.

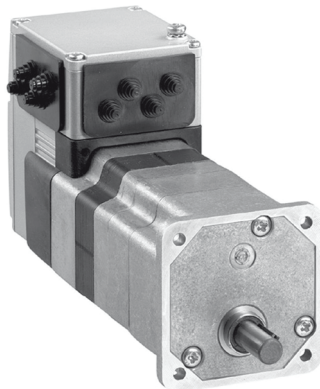
Lexium™ Integrated Drives

Motion control

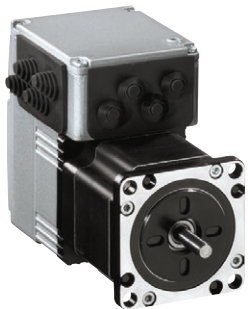
IL●1 for CANopen, PROFIBUS DP, RS 485



ILA1 with AC synchronous servo motor



ILE1 with brushless servo motor



ILS1 with stepper motor

Introduction

Lexium IL●1 Integrated Drives include a motor, control electronics and a communication interface for:

- CANopen DS301 machine bus (IL●1F)
- PROFIBUS DP V0 fieldbus (IL●1B)
- RS 485 serial link (IL●1R)

The communication bus interface is used for setting parameters and controlling the integrated drives, as well as for commissioning, using Lexium CT software.

Lexium IL●1 Integrated Drives also have an RS 485 serial link interface and an interface for four 24 V signals, which can be configured as either inputs or outputs to suit application requirements.

These drivers also have a Safe Torque Off (Power Removal) safety function as standard, which prevents unintended motor operation.

The control section is comprised of control electronics and a power stage which share a common power supply.

Lexium IL●1 Integrated Drives can operate on a 24 V to 36 V $\overline{\text{---}}$ supply.

Three motor technologies are offered to cover a wide range of applications.

Adaptability assured by three motor technologies

The Lexium IL●1 Integrated Drive range offers three motor technologies to meet the requirements for dynamic performance, flexibility or precision in a wide variety of applications:

ILA1: the integrated drive for dynamic processes

The ILA1 Integrated Drive is equipped with an AC synchronous servo motor. This motor features high dynamic performance, as it can be temporarily boosted when accelerating.

Application example: bottling

Bottles are transported on a conveyor up to the filling point, where their presence is detected by a sensor.

The Lexium ILA1 drive activates a pump to start filling the bottle then ensures accurate filling and instant stop to avoid overflowing by means of its closed loop function.

ILE1: the integrated drive for automatic format adjustment

The ILE1 Integrated Drive is equipped with a DC brushless motor. This motor has a high automatic holding torque, which makes the use of a holding brake unnecessary in the majority of applications.

The control electronics incorporated in the ILE1 drive provide absolute encoder functionality.

Application example: ground-mounted solar power plants

The latest solar power plants are equipped with biaxial tracking systems (azimuth/zenith).

Each axis is controlled by two Lexium ILE1 Integrated Drives.

The Lexium ILE1 drive was chosen for its high holding torque and because it totally eliminates the need for electrical cabinets.

ILS1: the integrated drive for short range positioning

With its 3-phase stepper motor, the ILS1 Integrated Drive offers high torque values at low rotation speeds.

In rotation speed mode, it has excellent stability characteristics and also enables high resolution positioning tasks.

Commissioning an ILS1 Integrated Drive with stepper motor is simplified, as it does not require any configuration of the control loop.

Application example: labelling machine

The Lexium ILS Integrated Drive's high torque is used to control the unrolling speed of the label roll.

Lexium™ Integrated Drives

Motion control

IL●1 for CANopen, PROFIBUS DP, RS 485

Interfaces

Communication bus interface

Depending on the IL drive model, the following communication buses can be connected:

- CANopen machine bus (protocol DS301)
- PROFIBUS DP V0 fieldbus (data format according to Profidrive V2.0 PPO type 2)
- RS 485 serial link

The communication bus interface is used for setting parameters and controlling the integrated drive.

This bus is also used as an option for connecting the terminal, when commissioning the integrated drive using Lexium CT PC software (see page 7). A suitable communication bus converter is then required, for example CAN/USB, PROFIBUS DP/USB or RS 485/USB.

RS 485 serial link interface

The Lexium IL●1 Integrated Drive is commissioned by default via the RS 485 serial link interface.

This interface also accesses the drive's integrated control/monitoring function. This function can also be accessed via the Lexium CT PC software.

The communication bus and RS 485 serial link can be connected simultaneously.

Interface for 24 V signals

Four 24 V signals are available, configurable as inputs or outputs. They can also be used for predefined functions such as limit switches or reference sensors, and can be used by the master controller.

The 24 V power for the outputs is provided internally via the integrated drive's power supply.

Interface for integrated Safe Torque Off function

The Safe Torque Off (Power Removal) safety function enables a category 0 or 1 stop to be performed in accordance with IEC/EN 60204-1 and/or prevents unintended motor operation in accordance with IEC/EN 61508 level SIL2, ISO 13849-1 performance level "d" (PL d) and IEC/EN 61800-5-2 (STO). No additional power protection is necessary.

The Lexium IL●1 Integrated Drive can remain powered up, which reduces system costs and restart time.

The Safe Torque Off function is activated via two redundant 24 V input signals (active in OFF state).

Special technical features

ILA1 with AC synchronous servo motor

- High dynamic performance and high peak torque
- Choice of:
 - single turn high resolution encoder, 16,384 points/turn (0.02°)
 - multiturn high resolution encoder, 16,384 points/turn (0.02°) for 4096 turns
- Integrated holding brake available as an option
- Planetary gearbox available as an option

ILE1 with DC brushless motor

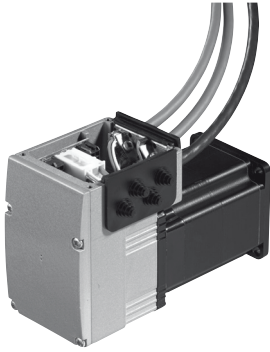
- High automatic holding torque
- Absolute encoder: no homing required after switching off/on
- Can be equipped with integral straight-tooth gearbox or tapered worm gearbox
- Planetary gearbox available as an option

ILS1 with 3-phase stepper motor

- High continuous stall torque
- Good speed stability characteristics
- High encoder accuracy (0.018°)
- Holding brake available as an option for ILS1●85 Integrated Drive
- Planetary gearbox available as an option

Lexium™ Integrated Drives Motion control

IL●1 for CANopen, PROFIBUS DP, RS 485



Integrated drive with printed circuit board connectors



Integrated drive with industrial connectors

Connections

Two types of connectors are available depending on the types of machine to be equipped.

They are used to connect the communication buses, the RS 485 serial link, the interfaces for 24 V signals and the Safe Torque Off function, as well as the power supply.

Printed circuit board connectors

Printed circuit board connectors are preferably used for wiring standard machines with cable harnesses.

The Lexium IL●1 Integrated Drive is connected by means of two cable entry plates, to be ordered separately (see accessories page 38).

Industrial connectors

Integrated drives with industrial connectors are preferably used for special machines and small series production machines.

The communication buses and the power supply are connected by means of the industrial connectors located on the top of the drive.

The RS 485 serial link, the 24 V signals and the Safe Torque Off function are connected via two plates fitted with industrial connectors, to be ordered separately (see accessories pages 38 and 40).

Compliance with international standards and certifications

The Lexium Integrated Drives product offer has been developed in accordance with strict international standards and recommendations for variable speed electrical power drive products – in particular IEC/EN 61800-3 (immunity to disturbance related to high frequency signals connected by cables and transmitted) – and IEC/EN 50178 (vibration resistance).

Compliance with electromagnetic compatibility requirements has been incorporated in the design of the Lexium Integrated Drive product range. The entire product range conforms to international standard IEC/EN 61800-3:2001, environment 2.

Lexium Integrated Drives carry the CE marking in accordance with the European machinery directive (98/37/EEC) and the European EMC directive (2004/108/EEC).

The entire range is cULus certified (United States and Canada).

It is also TÜV certified in accordance with safety standards for medical devices and equipment. This certification covers:

- Functional safety of electrical/electronic/programmable electronic safety-related systems (IEC 61508: 2000; SIL 2)
- Safety of machinery – functional safety of safety-related electrical, electronic and programmable electronic control systems (IEC 62061: 2005; SILcl2)
- Safety of machinery – safety-related parts of electronic control systems – part 1: General principles for design (ISO 13849-1: 2006; PL d (category 3))

Lexium™ Integrated Drives Motion control

IL●1 for CANopen, PROFIBUS DP, RS 485

Main functions

Lexium IL●1 Integrated Drives include the main functions required for motion control, including:

Configuration by means of parameter switches

The following settings can be performed using the parameter switches in the integrated drive:

- CANopen DS301 and RS 485 serial link:
 - setting of the communication bus address
 - setting of the transmission rate
 - end of line termination activation
 - setting of the pulse/direction (P/D) signals or encoder (A/B) signals to “electronic gearbox” mode for integrated drive ILA1●57 equipped with a single turn encoder
- PROFIBUS DP V0:
 - setting of the fieldbus address
 - end-of-line termination activation

Operating modes

The following operating modes can be set via the communication bus:

- electronic gearbox (for drive ILA1●57 with single turn encoder)
- speed profile
- manual (JOG)
- point-to-point
- homing

Other operating modes can be activated via the communication bus or with Lexium CT PC software:

- activation of the motor brake
- reversal of direction of rotation of the motor
- setting of the motion profile via the profile generator
- setting of the motor phase current
- triggering of the Quick Stop function
- fast position capture via an input signal
- configuration of I/O signals
- scaling of drive internal units to user units
- control/monitoring functions

Note: For details of available functions, please visit our website www.schneider-electric.com.

Lexium™ Integrated Drives Motion control

IL●1 for CANopen, PROFIBUS DP, RS 485
ILA1 with AC synchronous servo motor

Description

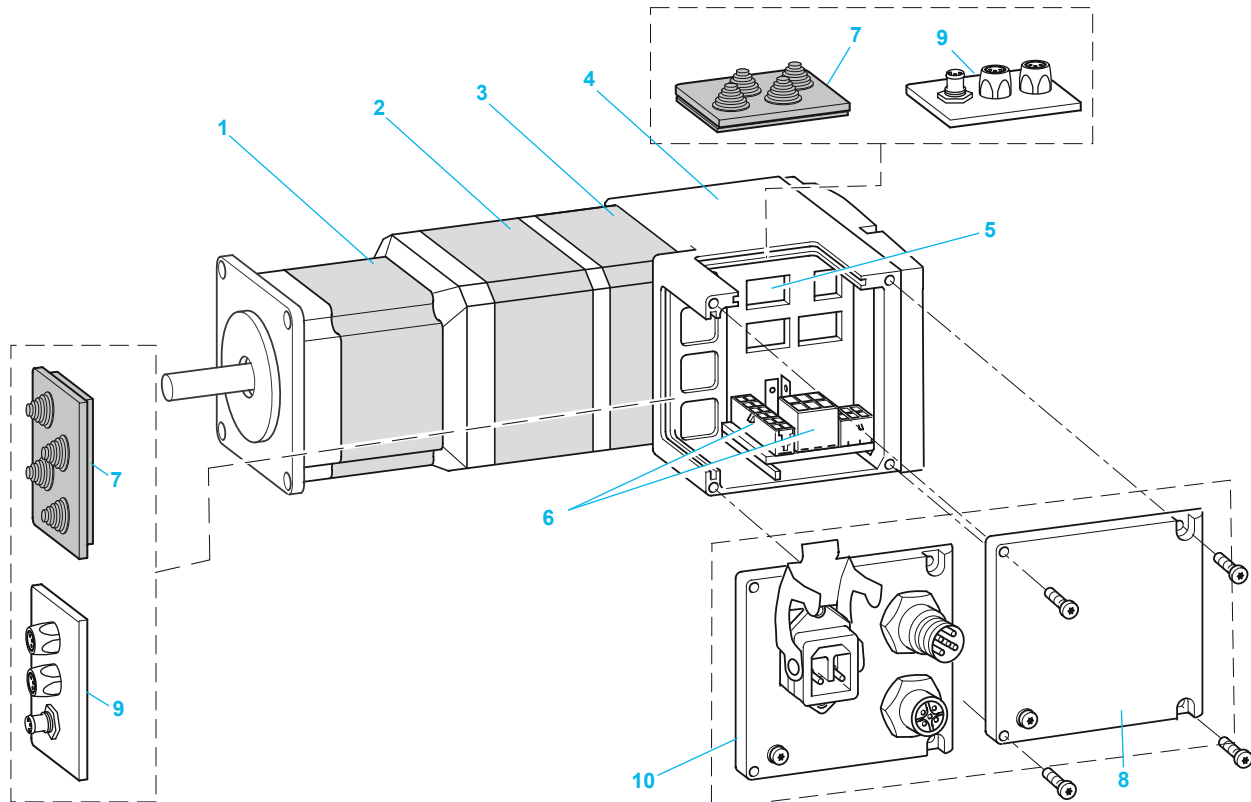
ILA1 Integrated Drives consist of control electronics with an interface for CANopen DS301, PROFIBUS DP or RS 485 communication bus and an AC synchronous servo motor.

They can be equipped with a single turn or multiturn encoder as required.

For ILA1 Integrated Drives equipped with a single turn encoder, an integrated holding brake is also available as an option.

Two types of connection are possible:

- Printed circuit board connectors
- Industrial connectors



- 1 AC synchronous servo motor
- 2 Integrated holding brake (optional)
- 3 Single turn or multiturn encoder
- 4 Electronic unit
- 5 Parameter switch
- 6 Connection terminals

For drive with printed circuit board connector:
7 Cable entry plate (see accessories page 38)

8 Cover

For drive with industrial connector:

9 Plate for connecting I/O and the Safe Torque Off function (see accessories page 40)

10 Cover for connecting the 24/36 V $\overline{\text{V}}$ power supply and the communication bus (see accessories page 40)

Note: I/O connection plate equipped with industrial connectors for RS 485 serial link, CANopen machine bus and PROFIBUS DP communication bus: 2 round connectors (1 round connector for each signal, IN and OUT).

Lexium™ Integrated Drives Motion control

IL●1 for CANopen, PROFIBUS DP, RS 485
ILA1 with AC synchronous servo motor



ILA1 Integrated Drive with AC synchronous servo motor

References	
Example:	I L A 1 B 5 7 1 P B 1 A 0
Motor type A = AC synchronous servo motor	I L A 1 B 5 7 1 P B 1 A 0
Supply voltage 1 = 24...36 V	I L A 1 B 5 7 1 P B 1 A 0
Communication interface B = PROFIBUS DP F = CANopen DS301 R = RS 485	I L A 1 B 5 7 1 P B 1 A 0
Flange size 57 = 57 mm	I L A 1 B 5 7 1 P B 1 A 0
Drive type (1) 1 = ILA1●571 2 = ILA1●572	I L A 1 B 5 7 1 P B 1 A 0
Winding type (1) P = medium rotation speed T = high rotation speed	I L A 1 B 5 7 1 P B 1 A 0
Connection B = printed circuit board connector C = industrial connector	I L A 1 B 5 7 1 P B 1 A 0
Encoder type 1 = single turn encoder (16,384 points/turn) 2 = multiturn encoder (16,384 points/turn x 4096 turns) (2)	I L A 1 B 5 7 1 P B 1 A 0
Holding brake A = without holding brake F = with holding brake (2)	I L A 1 B 5 7 1 P B 1 A 0
Gearbox 0 = without gearbox	I L A 1 B 5 7 1 P B 1 A 0

(1) See the main specifications and dimensions according to the type of drive in the table below:

Drive		ILA1●571				ILA1●572				
Winding type		T		P		T		P		
Nominal supply voltage	V ~	24	36	24	36	24	36	24	36	
Nominal speed of rotation	rpm	5100	7500	3200	5500	3100	5000	2600	4300	
Peak stall torque	Nm	0.43		0.6		0.61		0.72		
Continuous stall torque	Nm	0.26				0.41		0.45		
Dimensions (overall in mm)	With single turn encoder	W x H x D	57.2 x 92.2 x 145.3				57.2 x 92.2 x 163.8			
	With multiturn encoder	W x H x D	57.2 x 92.2 x 189.3				57.2 x 92.2 x 207.8			
	With holding brake	W x H x D	57.2 x 92.2 x 190.8				57.2 x 92.2 x 209.3			

(2) The holding brake and the multiturn encoder cannot be used together.

Note: See all the data (specifications, dimensions) on our website www.schneider-electric.com.

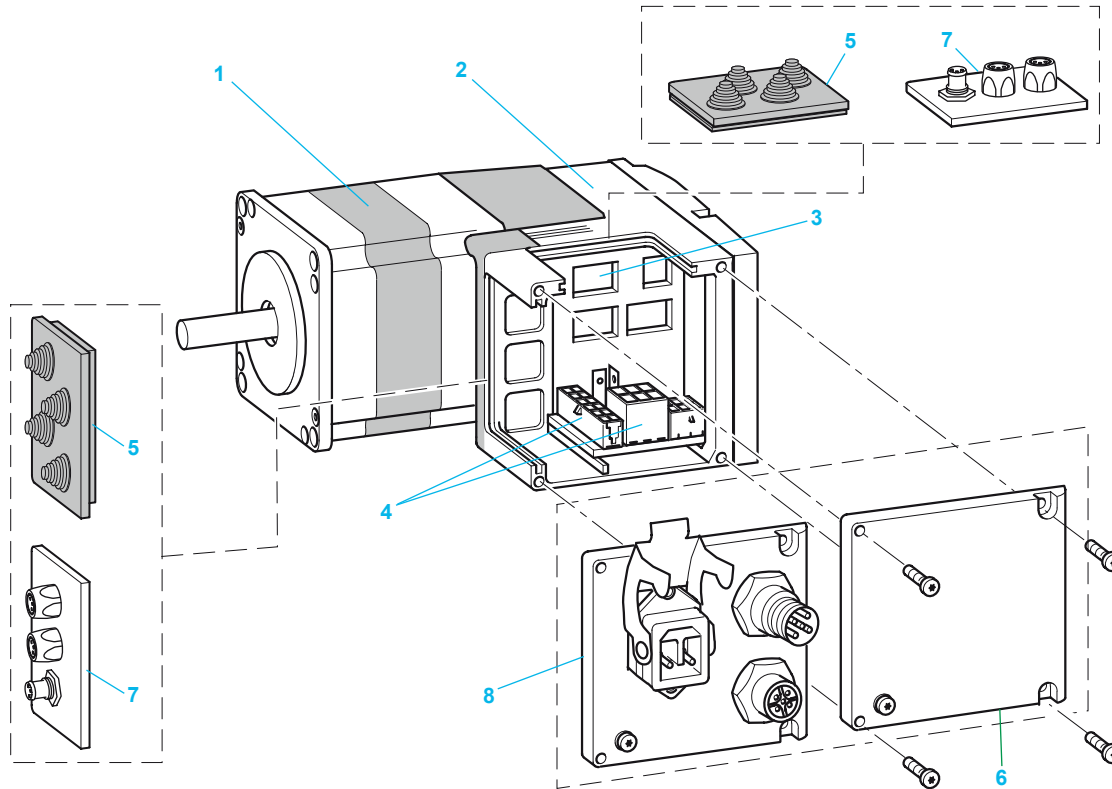
Lexium™ Integrated Drives Motion control

IL●1 for CANopen, PROFIBUS DP, RS 485
ILE1 with DC brushless motor

Description

ILE1 Integrated Drives consist of control electronics with an interface for CANopen DS301, PROFIBUS DP or RS 485 communication bus and a DC brushless motor.

They are available with straight-tooth gearbox or tapered worm gearbox, and printed circuit board connectors or industrial connectors.



- 1 DC brushless motor
- 2 Electronic unit
- 3 Parameter switch
- 4 Connection terminals

For integrated drive with printed circuit board connector:

5 Cable entry plate (see accessories page 38)

6 Cover

For integrated drive with industrial connector:

7 Plate for connecting I/O and the Safe Torque Off function (see accessories page 40)

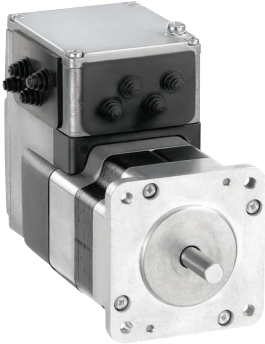
8 Cover for connecting the 24/36 V $\overline{\text{V}}$ power supply and the communication bus (see accessories page 40)

Note: I/O connection plate equipped with industrial connectors for RS 485 serial link, CANopen machine bus and PROFIBUS DP communication bus: 2 round connectors (1 round connector for each signal, IN and OUT).

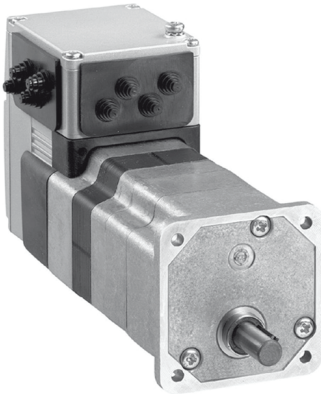
Lexium™ Integrated Drives

Motion control

IL●1 for CANopen, PROFIBUS DP, RS 485
ILE1 with DC brushless motor



ILE1 Integrated Drive with brushless servo motor



ILE1 Integrated Drive with brushless servo motor and straight-tooth gearbox

References

Example:	I	L	E	1	B	6	6	1	P	B	1	A	1
Motor type E = DC brushless motor	I	L	E	1	B	6	6	1	P	B	1	A	1
Supply voltage 1 = 24...36 V	I	L	E	1	B	6	6	1	P	B	1	A	1
Communication interface B = PROFIBUS DP F = CANopen DS301 R = RS 485	I	L	E	1	B	6	6	1	P	B	1	A	1
Flange size 66 = 66 mm	I	L	E	1	B	6	6	1	P	B	1	A	1
Drive type (1) 1 = ILE1●661	I	L	E	1	B	6	6	1	P	B	1	A	1
Winding type (1) P = medium rotation speed	I	L	E	1	B	6	6	1	P	B	1	A	1
Connection B = printed circuit board connector C = industrial connector	I	L	E	1	B	6	6	1	P	B	1	A	1
Encoder type 1 = encoder for DC brushless motor (12 points/turn)	I	L	E	1	B	6	6	1	P	B	1	A	1
Holding brake A = without holding brake	I	L	E	1	B	6	6	1	P	B	1	A	1
Gearbox 0 = without gearbox	I	L	E	1	B	6	6	1	P	B	1	A	1
Straight-tooth gearbox 1 = reduction ratio 18:1 (160:9) 2 = reduction ratio 38:1 (75:2) 3 = reduction ratio 54:1 (490:9) 4 = reduction ratio 115:1 (3675:32)													
Tapered worm gearbox 5 = reduction ratio 24:1 (525:22) 6 = reduction ratio 54:1 (1715:32) 7 = reduction ratio 92:1 (735:5) 8 = reduction ratio 115:1 (3675:32)													

(1) See the main specifications and dimensions according to the type of drive in the table below:

Drive		ILE1●661	
Nominal supply voltage	V $\overline{\text{---}}$	24	36
Nominal current	A	4.7	5.1
Nominal speed of rotation	rpm	4000	4800
Nominal torque	Nm	0.175	0.24
Maximum torque	Nm	0.26	0.36
Detent torque (at zero current)	Nm	0.1	0.06
Dimensions (overall in mm)	Without gearbox	W x H x D	66 x 104 x 122
	With straight-tooth gearbox	W x H x D	66 x 104 x 174
	With worm gearbox	W x H x D	66 x 104 x 229

Note: See all the data (specifications, dimensions) on our website www.schneider-electric.com.

Lexium™ Integrated Drives Motion control

IL●1 for CANopen, PROFIBUS DP, RS 485
ILS1 with 3-phase stepper motor

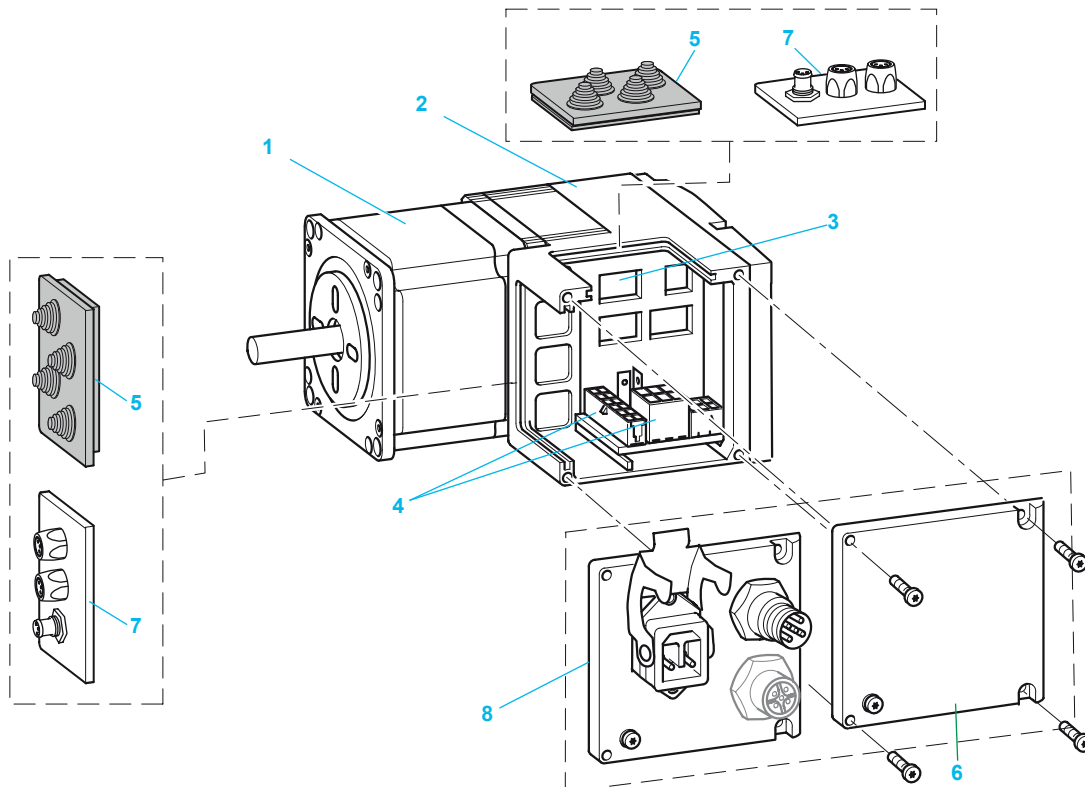
Description

ILS1 Integrated Drives consist of control electronics with an interface for CANopen DS301, PROFIBUS DP or RS 485 communication bus and a 3-phase stepper motor.

For ILS1●85 Integrated Drives, an integrated holding brake is also available as an option.

Two types of connection are possible:

- Printed circuit board connectors
- Industrial connectors



- 1 3-phase stepper motor
- 2 Electronic unit
- 3 Parameter switch
- 4 Connection terminals

For drive with printed circuit board connector:
5 Cable entry plate (see accessories page 38)

6 Cover

For drive with connector for industrial circuit:

7 Plate for connecting I/O and the Safe Torque Off function (see accessories page 40)

8 Cover for connecting the 24/36 V $\overline{\text{V}}$ power supply and the communication bus (see accessories page 40)

Note: I/O connection plate equipped with industrial connectors for RS485 serial link, CANopen machine bus and PROFIBUS DP communication bus: 2 round connectors (1 round connector for each signal, IN and OUT).

Lexium™ Integrated Drives Motion control

IL●1 for CANopen, PROFIBUS DP, RS 485
ILS1 with 3-phase stepper motor



ILS1 Integrated Drive with stepper motor

References													
Example:	I	L	S	1	B	5	7	1	P	B	1	A	0
Motor type S = 3-phase stepper motor	I	L	S	1	B	5	7	1	P	B	1	A	0
Supply voltage 1 = 24...36 V	I	L	S	1	B	5	7	1	P	B	1	A	0
Communication interface B = PROFIBUS DP F = CANopen DS301 R = RS 485	I	L	S	1	B	5	7	1	P	B	1	A	0
Flange size 57 = 57 mm 85 = 85 mm	I	L	S	1	B	5	7	1	P	B	1	A	0
Drive type (1) 1 = ILS1●●●1 2 = ILS1●●●2 3 = ILS1●●●3	I	L	S	1	B	5	7	1	P	B	1	A	0
Winding type (1) P = medium rotation speed T = high rotation speed (2)	I	L	S	1	B	5	7	1	P	B	1	A	0
Connection B = printed circuit board connector C = industrial connector	I	L	S	1	B	5	7	1	P	B	1	A	0
Sensor type 1 = reference pulse sensor (Zero marker)	I	L	S	1	B	5	7	1	P	B	1	A	0
Holding brake A = without holding brake F = with holding brake (3)	I	L	S	1	B	5	7	1	P	B	1	A	0
Gearbox 0 = without gearbox	I	L	S	1	B	5	7	1	P	B	1	A	0

(1) See the main specifications and dimensions according to the type of drive in the table below:

Drive		ILS1●571	ILS1●572	ILS1●573	
Winding type		P	P	P	
Nominal speed of rotation	rpm	1000	600	450	
Maximum torque	Nm	0.45	0.9	1.5	
Holding torque	Nm	0.51	1.02	1.7	
Dimensions (overall in mm)	W x H x D	57.2 x 92.2 x 101.9	57.2 x 92.2 x 115.9	57.2 x 92.2 x 138.9	
Drive		ILS1●851	ILS1●852	ILS1●853	
Winding type		P	P	P	T
Nominal speed of rotation	rpm	450	200	120	300
Maximum torque	Nm	2	4	6	4.5
Holding torque	Nm	2	4	6	4.5
Dimensions (overall in mm)	Without holding brake	W x H x D	85 x 119.6 x 140.6	85 x 119.6 x 170.6	85 x 119.6 x 200.6
	With holding brake	W x H x D	85 x 119.6 x 187.3	85 x 119.6 x 217.3	85 x 119.6 x 247.3

(2) Twinding only available for integrated drive with 85 mm flange (ILS1●853).

(3) Holding brake only available for integrated drive with 85 mm flange (ILS1●85).

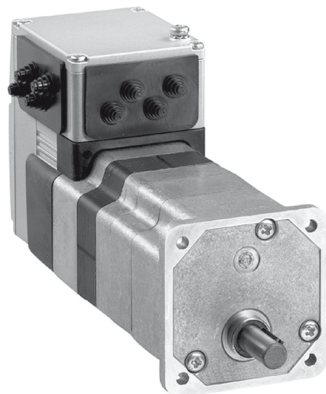
Note: See all the data (specifications, dimensions) on our website www.schneider-electric.com.

Lexium™ Integrated Drives Motion control

IL●2 for DeviceNet, EtherCAT, EtherNet/IP,
Modbus TCP, Ethernet POWERLINK



ILA2 with AC synchronous servo motor



ILE2 with brushless servo motor



ILS2 with stepper motor

Introduction

Lexium IL●2 Integrated Drives include a motor, control electronics and a communication interface for:

- DeviceNet (IL●2D)
- EtherCAT (IL●2E)
- EtherNet/IP (IL●2K)
- Modbus TCP (IL●2T)
- Ethernet POWERLINK (IL●2P)

The communication bus interface is used for setting parameters and controlling the integrated drives, as well as for commissioning using Lexium CT software.

Lexium IL●2 Integrated Drives also have an RS 485 serial link interface and an interface for four 24 V signals, which can be configured as either inputs or outputs to suit application requirements.

They also include the Safe Torque Off (Power Removal) safety function as standard, which prevents unintended motor operation.

The control section is comprised of control electronics and a power stage which share a common power supply.

Lexium IL●2 Integrated Drives can operate on a 24 V to 48 V $\bar{\text{~}}$ supply.

Three motor technologies are offered to cover a wide range of applications.

Adaptability assured by three motor technologies

The Lexium IL●2 Integrated Drive product range offers three motor technologies to meet requirements for dynamic performance, flexibility or precision in a wide variety of applications:

ILA2: the integrated drive for dynamic processes

The ILA2 Integrated Drive is equipped with an AC synchronous servo motor. This motor features high dynamic performance, as it can be temporarily boosted when accelerating.

Application example: manufacture of CDs/DVDs

From the pressing of the CD or DVD right through to the end of manufacturing, the process is totally automated using Lexium ILA2 Integrated Drives, which increase productivity and reduce floor space by approximately 10%.

ILE2: the integrated drive for automatic format adjustment

The ILE2 Integrated Drive is equipped with a DC brushless motor. This motor has a high automatic holding torque. This makes the use of a holding brake unnecessary in the majority of applications. The control electronics incorporated in the ILE2 drive provide absolute encoder functionality.

Application example: manufacture of solar cells

Electrical circuits are printed using a silkscreening process. Lexium ILE2 Integrated Drives are used for conveying. Dynamic performance is significantly improved and the wiring time is reduced. Other integrated drives, such as Lexium ILS2, are also used for precise positioning, or Lexium ILA2 for the printing process.

ILS2: the integrated drive for short range positioning

With its 3-phase stepper motor, the ILS2 Integrated Drive offers high torque values at low rotation speeds. It is mainly used in rotation speed mode with excellent stability characteristics and also for high resolution positioning. The commissioning of ILS2 drives with stepper motor is simple, as it does not require any configuration of the control loop.

Application example: lumber processing

In applications using multi-blade circular saws, the planks are measured using lasers. They are positioned using linear axes equipped with a Lexium ILS2 Integrated Drive. Because of the harsh environmental conditions, the control cabinets are located some distance from the machinery. This concept of decentralization considerably reduces the wiring.

Lexium™ Integrated Drives

Motion control

IL●2 for DeviceNet, EtherCAT, EtherNet/IP,
Modbus TCP, Ethernet POWERLINK

Interfaces

Communication bus interface

Depending on the model, the following communication buses can be connected:

- DeviceNet
- EtherCAT (according to IEEE 802.3)
- EtherNet/IP (according to IEEE 802.3)
- Modbus TCP (according to IEEE 802.3)
- Ethernet POWERLINK (according to IEEE 802.3)

The communication bus interface is used for setting parameters and controlling the integrated drive.

It is also used as an option for connecting the terminal when commissioning the integrated drive using Lexium CT PC software (see page 7).

Connection to the DeviceNet fieldbus, available depending on the model, provides access to the ADR (Auto Device Replacement) function. If maintenance is required, this function enables drives to be replaced without having to redefine the parameters.

The communication bus and RS 485 serial link can be connected simultaneously.

RS 485 serial link interface

The Lexium IL●2 Integrated Drive is commissioned by default via the RS 485 serial link interface.

This interface also accesses the control/monitoring function included in the drive. This function can also be accessed via the Lexium CT PC software.

The communication bus and RS 485 serial link can be connected simultaneously.

Interface for 24 V signals

Four 24 V signals are available, configurable as inputs or outputs.

They can also be used to set the parameters of predefined functions such as limit switch detection.

These signals can be used by the master controller.

The 24 V power for the outputs is provided internally via the integrated drive's power supply.

Interface for integrated Safe Torque Off function

The Safe Torque Off (Power Removal) safety function enables a category 0 or 1 stop to be performed in accordance with standard IEC/EN 60204-1 and/or prevents unintended motor operation in accordance with standard IEC/EN 61508 level SIL2, ISO 13849-1 performance level "d" (PL d) and IEC/EN 61800-5-2 (STO).

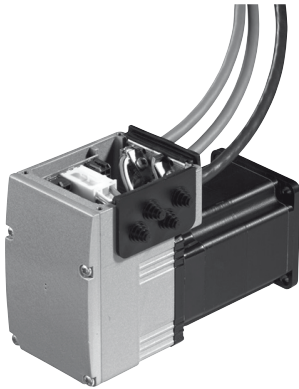
No additional power protection option is necessary. The Lexium IL●1 Integrated Drive can remain powered up, which reduces system costs and restart time.

The Safe Torque Off function is activated via two redundant 24 V input signals (active in OFF state).

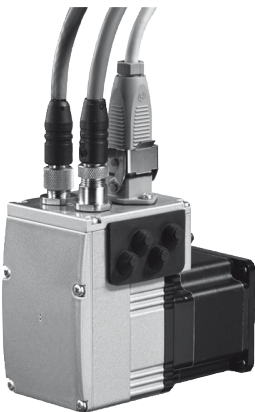
Lexium™ Integrated Drives

Motion control

IL●2 for DeviceNet, EtherCAT, EtherNet/IP, Modbus TCP, Ethernet POWERLINK



Integrated drive with printed circuit board connectors



Integrated drive with industrial connectors

Special technical features

ILA2 with AC synchronous servo motor

- High dynamic performance and high peak torque
- Choice of:
 - Single turn high resolution encoder, 16,384 points/turn (0.02°)
 - Multiturn high resolution encoder, 16,384 points/turn (0.02°) for 4096 turns
- Integrated holding brake available as an option
- Planetary gearbox available as an option

ILE2 with DC brushless motor

- High automatic holding torque
- Absolute encoder: no homing required after switching off/on
- Can be equipped with integral straight-tooth gearbox or tapered worm gearbox
- Planetary gearbox available as an option

ILS2 with 3-phase stepper motor

- High continuous stall torque
- Good speed stability characteristics
- High encoder accuracy (0.018°)
- Holding brake available as an option for ILS2●85 Integrated Drive
- Planetary gearbox available as an option

Connections

Two types of connectors are available, depending on the types of machine to be equipped. They are used to connect the communication buses, the RS 485 serial link, the interfaces for 24 V signals, and the Safe Torque Off function...as well as the power supply.

Printed circuit board connectors

Printed circuit board connectors are preferably used for wiring standard machines with cable harnesses.

The integrated drive is connected via two cable entry plates, to be ordered separately (see accessories page 38).

Industrial connectors

Integrated drives with industrial connectors are preferably used for special machines and small series production machines.

The communication buses and power supply are connected by means of the industrial connectors located on the top of the drive.

The RS 485 serial link, the 24 V signals and the Safe Torque Off function are connected via two plates fitted with industrial connectors, to be ordered separately (see accessories pages 38 and 40).

Lexium™ Integrated Drives

Motion control

IL●2 for DeviceNet, EtherCAT, EtherNet/IP,
Modbus TCP, Ethernet POWERLINK

Compliance with international standards and certifications

The Lexium Integrated Drive product range has been developed in accordance with strict international standards and with the recommendations for variable speed electrical power drive products, in particular IEC/EN 61800-3 (immunity to disturbance related to high frequency signals connected by cables and transmitted) and IEC/EN 50178 (vibration resistance).

Compliance with electromagnetic compatibility requirements has been incorporated in the integrated drive range. The entire product range conforms to international standard IEC/EN 61800-3:2001, environment 2.

Lexium Integrated Drives carry the CE marking in accordance with the European machinery directive (98/37/EEC) and the European EMC directive (2004/108/EEC).

The entire range is cULus certified (United States and Canada).

It is also TÜV certified in accordance with the safety standards for medical devices and equipment. This certification covers:

- Functional safety of electrical/electronic/programmable electronic safety-related systems (IEC 61508: 2000; SIL 2)
- Safety of machinery – functional safety of safety-related electrical, electronic and programmable electronic control systems (IEC 62061: 2005; SILcl2)
- Safety of machinery – safety-related parts of electronic control systems – part 1: General principles for design (ISO 13849-1: 2006; PL d (category 3))

Main functions

Lexium IL●2 Integrated Drives include the main functions required for motion control, in particular:

Configuration by parameter switch

Depending on the communication bus, the following settings can be performed using the parameter switches in the integrated drive:

- DeviceNet:
setting of the communication bus address
- EtherCAT, Ethernet/IP, Modbus TCP and Ethernet POWERLINK:
setting of the IP address

Operating modes

The following operating modes can be set via the communication bus:

- Electronic gearbox (for ILA2 Integrated Drive with single turn encoder)
- Speed profile
- Manual (JOG)
- Point-to-point
- Homing

Other operating modes can be activated via the communication bus or the Lexium CT PC software:

- Activation of the motor brake
- Reversal of the direction of rotation of the motor
- Setting of the motion profile via the profile generator
- Setting of the motor phase current
- Triggering of the Quick Stop function
- Fast position capture via an input signal
- Configuration of I/O signals
- Scaling of units within the drive to user units
- Control/monitoring functions

Note: For details of available functions, please visit our website www.schneider-electric.com.

Lexium™ Integrated Drives

Motion control

IL●2 for DeviceNet, EtherCAT, EtherNet/IP, Modbus TCP, Ethernet POWERLINK
 ILA2 with AC synchronous servo motor

Description

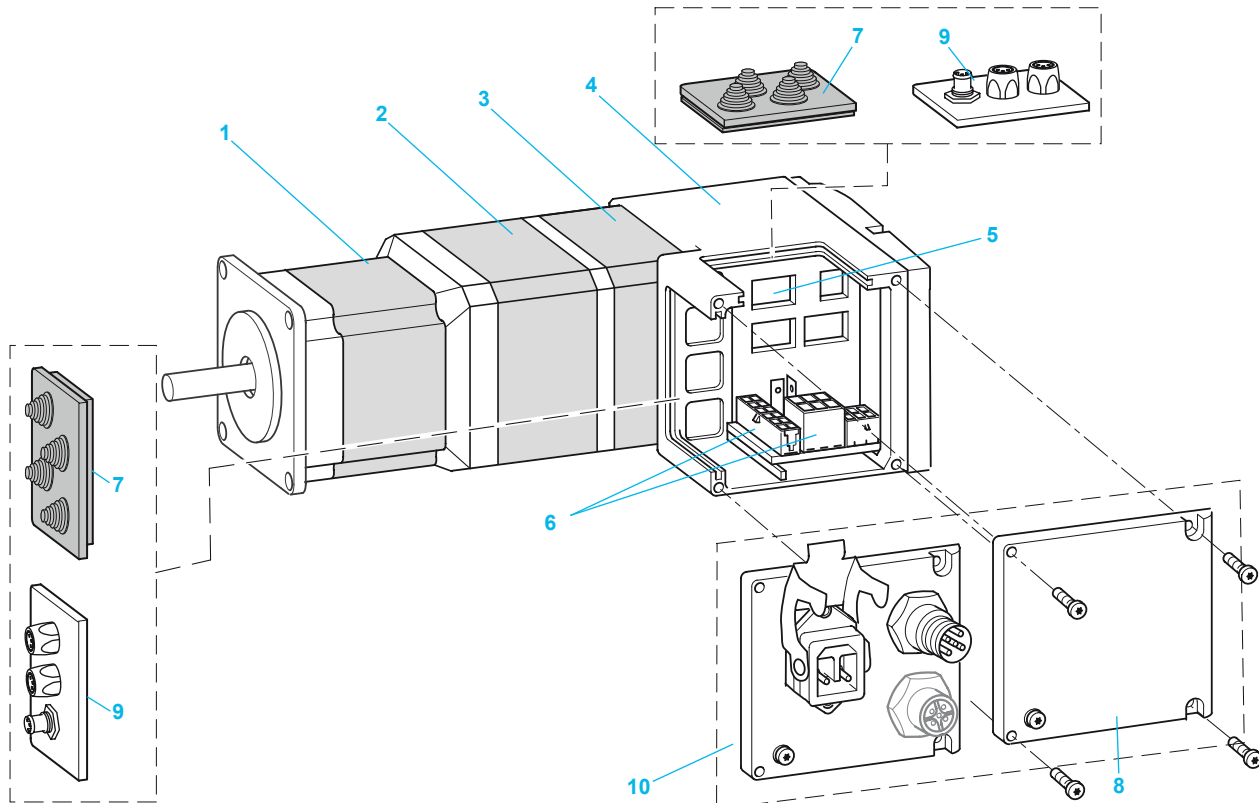
ILA2 Integrated Drives consist of control electronics with an interface for DeviceNet, EtherCAT, EtherNet/IP, Modbus TCP or Ethernet POWERLINK communication bus and an AC synchronous servo motor.

They can be equipped with a single turn or multiturn encoder as required.

For ILA2 Integrated Drives equipped with a single turn encoder, an integrated holding brake is also available as an option.

Two types of connection are possible:

- Printed circuit board connectors
- Industrial connectors



- 1 AC synchronous servo motor
- 2 Integrated holding brake (option)
- 3 Single turn or multiturn encoder
- 4 Electronic unit
- 5 Parameter switch
- 6 Connection units

For drive with printed circuit board connector:

7 Cable entry plate (see accessories page 38)

8 Cover

For drive with industrial connector:

9 Plate for connecting I/O and the Safe Torque Off function (see accessories page 40)

10 Cover for connecting the 24/48 V $\overline{\text{V}}$ power supply and the communication bus (see accessories page 40)

Note: I/O connection plate equipped with industrial connectors for:

DeviceNet and Modbus TCP communication bus: 1 round connector for IN and OUT signals

EtherCAT, EtherNet/IP and Ethernet POWERLINK communication bus: 2 round connectors (1 round connector for each signal, IN and OUT).

Lexium™ Integrated Drives Motion control

IL●2 for DeviceNet, EtherCAT, EtherNet/IP,
Modbus TCP, Ethernet POWERLINK
ILA2 with AC synchronous servo motor



ILA2 Integrated Drive with AC synchronous servo motor

References													
Example:	I	L	A	2	D	5	7	1	P	B	1	A	0
Motor type A = AC synchronous servo motor	I	L	A	2	D	5	7	1	P	B	1	A	0
Supply voltage 2 = 24... 48 V	I	L	A	2	D	5	7	1	P	B	1	A	0
Communication interface D = DeviceNet E = EtherCAT K = EtherNet/IP P = Ethernet POWERLINK T = Modbus TCP	I	L	A	2	D	5	7	1	P	B	1	A	0
Flange size 57 = 57 mm	I	L	A	2	D	5	7	1	P	B	1	A	0
Drive type (1) 1 = ILA2●571 2 = ILA2●572	I	L	A	2	D	5	7	1	P	B	1	A	0
Winding type (1) P = medium rotation speed T = high rotation speed	I	L	A	2	D	5	7	1	P	B	1	A	0
Connection B = printed circuit board connector C = industrial connector	I	L	A	2	D	5	7	1	P	B	1	A	0
Encoder type 1 = single turn encoder (16,384 points/turn) 2 = multiturn encoder (2) (16,384 points/turn x 4096 turns)	I	L	A	2	D	5	7	1	P	B	1	A	0
Holding brake A = without holding brake F = with holding brake (2)	I	L	A	2	D	5	7	1	P	B	1	A	0
Without gearbox 0 = without gearbox	I	L	A	2	D	5	7	1	P	B	1	A	0

(1) See the main specifications and dimensions according to the type of drive in the table below:

Drive		ILA2●571				ILA2●572				
Winding type		T		P		T		P		
Nominal supply voltage	V ~	24	48	24	48	24	48	24	48	
Nominal speed of rotation	rpm	5000	7000	3200	5100	3000	5100	1600	3400	
Peak stall torque	Nm	0.45		0.62		0.85		1.62		
Continuous stall torque	Nm	0.31		0.44		0.57		0.78		
Dimensions (overall in mm)	With single turn encoder	W x H x D	57.2 x 92.2 x 145.3				57.2 x 92.2 x 163.8			
	With multiturn encoder	W x H x D	57.2 x 92.2 x 189.3				57.2 x 92.2 x 207.8			
	With holding brake	W x H x D	57.2 x 92.2 x 190.8				57.2 x 92.2 x 209.3			

(2) The holding brake and the multiturn encoder cannot be used together.

Note: See all the data (specifications, dimensions) on our website www.schneider-electric.com.

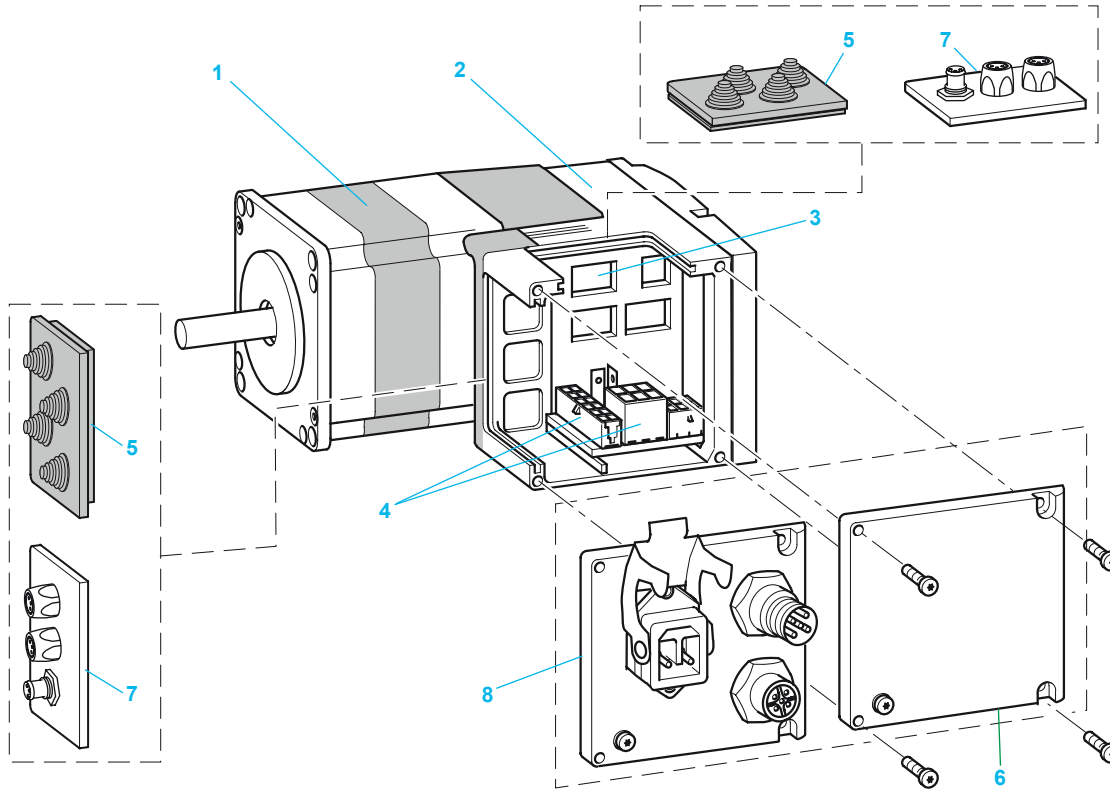
Lexium™ Integrated Drives Motion control

IL●2 for DeviceNet, EtherCAT, EtherNet/IP,
Modbus TCP, Ethernet POWERLINK
ILE2 with DC brushless motor

Description

ILE2 Integrated Drives consist of control electronics with an interface for DeviceNet, EtherCAT, EtherNet/IP, Modbus TCP or Ethernet POWERLINK communication bus and a DC brushless motor.

They are available with straight-tooth gearbox or tapered worm gearbox with printed circuit board connectors or industrial connectors.



1 DC brushless motor

2 Electronic unit

3 Parameter switch

4 Connection terminals

For integrated drive with printed circuit board connector:

5 Cable entry plate (see accessories page 38)

6 Cover

For integrated drive with industrial connector:

7 Plate for connecting I/O and the Safe Torque Off function (see accessories page 40)

8 Cover for connecting the 24/48 V $\overline{\text{V}}$ power supply and the communication bus (see accessories page 40)

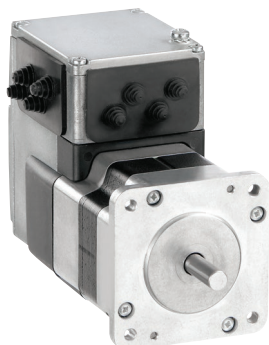
Note: I/O connection plate equipped with industrial connectors for:

DeviceNet and Modbus TCP communication bus (1 round connector for IN and OUT signals)

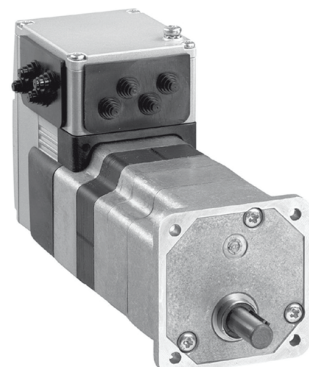
EtherCAT, EtherNet/IP and Ethernet POWERLINK communication bus: 2 round connectors (1 round connector for each signal, IN and OUT).

Lexium™ Integrated Drives Motion control

IL●2 for DeviceNet, EtherCAT, EtherNet/IP,
Modbus TCP, Ethernet POWERLINK
ILE2 with DC brushless motor



ILE2 Integrated Drive with brushless servo motor



ILE2 Integrated Drive with brushless servo motor and straight-tooth gearbox

References		I	L	E	2	D	6	6	1	P	B	1	A	1
Example:		I	L	E	2	D	6	6	1	P	B	1	A	1
Motor type E = DC brushless motor		I	L	E	2	D	6	6	1	P	B	1	A	1
Supply voltage 2 = 24...48 V		I	L	E	2	D	6	6	1	P	B	1	A	1
Communication interface D = DeviceNet E = EtherCAT K = EtherNet/IP P = Ethernet POWERLINK T = Modbus TCP		I	L	E	2	D	6	6	1	P	B	1	A	1
Flange size 66 = 66 mm		I	L	E	2	D	6	6	1	P	B	1	A	1
Drive type (1) 1 = ILE2●661 2 = ILE2●662		I	L	E	2	D	6	6	1	P	B	1	A	1
Winding type (1) P = medium rotation speed		I	L	E	2	D	6	6	1	P	B	1	A	1
Connection B = printed circuit board connector C = industrial connector		I	L	E	2	D	6	6	1	P	B	1	A	1
Encoder type 1 = encoder for DC brushless motor (12 points/turn)		I	L	E	2	D	6	6	1	P	B	1	A	1
Holding brake A = without holding brake		I	L	E	2	D	6	6	1	P	B	1	A	1
Gearbox 0 = without gearbox Straight-tooth gearbox (2) 1 = reduction ratio 18:1 (160:9) 2 = reduction ratio 38:1 (75:2) 3 = reduction ratio 54:1 (490:9) 4 = reduction ratio 115:1 (3675:32) Tapered worm gearbox (2) 5 = reduction ratio 24:1 (525:22) 6 = reduction ratio 54:1 (1715:32) 7 = reduction ratio 92:1 (735:5) 8 = reduction ratio 115:1 (3675:32)		I	L	E	2	D	6	6	1	P	B	1	A	1

(1) See the main specifications and dimensions according to the type of drive in the table below:

Drive		ILE2●661		ILE2●662	
Nominal supply voltage	V $\overline{\text{---}}$	24	48	24	48
Nominal current	A	6.8	3.8	9.5	9.5
Nominal speed of rotation	rpm	4800	6000	3100	5000
Nominal torque	Nm	0.26		0.5	
Maximum torque	Nm	0.43		0.8	
Detent torque (at zero current)	Nm	0.08		0.106	
Dimensions (overall in mm)	Without gearbox	W x H x D	66 x 104 x 122		66 x 104 x 140
	With straight-tooth gearbox	W x H x D	66 x 104 x 174		
	With worm gearbox	W x H x D	66 x 104 x 229		

(2) Gearbox only available for ILE2●661 Integrated Drive.

Note: See all the data (specifications, dimensions) on our website www.schneider-electric.com.

Lexium™ Integrated Drives Motion control

IL●2 for DeviceNet, EtherCAT, EtherNet/IP,
Modbus TCP, Ethernet POWERLINK
ILS2 with 3-phase stepper motor

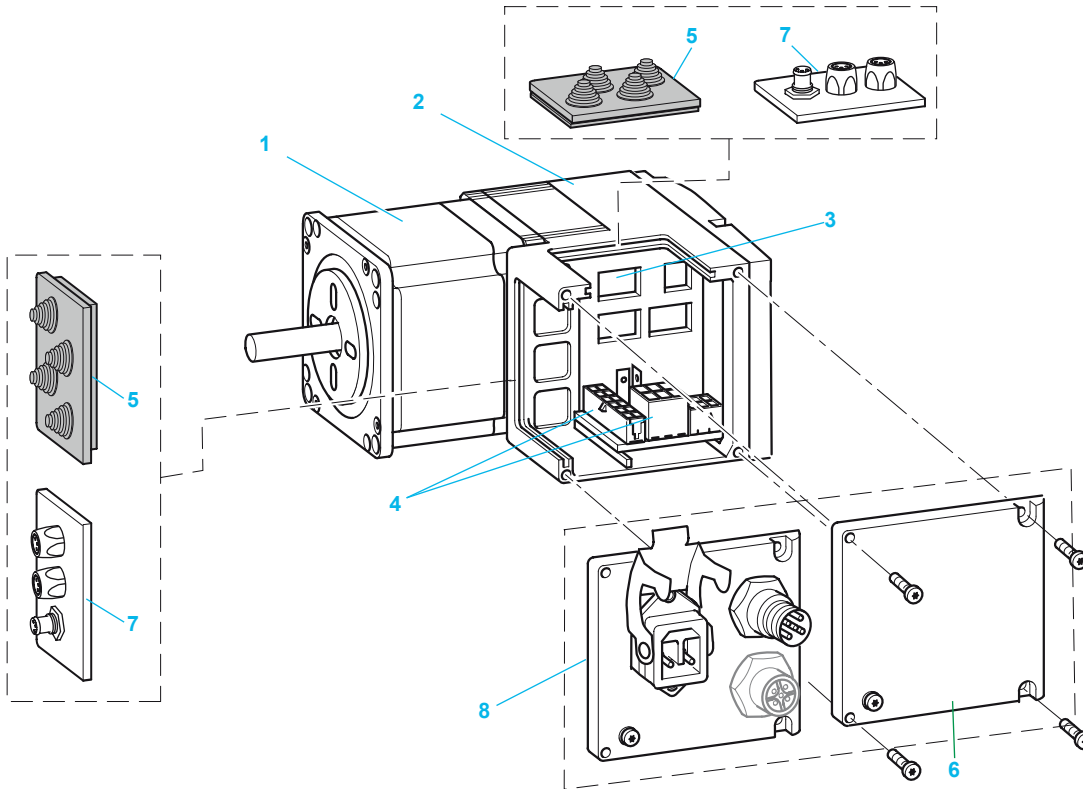
Description

ILS2 Integrated Drives consist of control electronics with an interface for DeviceNet, EtherCAT, EtherNet/IP, Modbus TCP or Ethernet POWERLINK communication bus and a 3-phase stepper motor.

For ILS2●85 Integrated Drives, an integrated holding brake is also available as an option.

Two types of connection are possible:

- Printed circuit board connectors
- Industrial connectors



- 1 3-phase stepper motor
- 2 Electronic unit
- 3 Parameter switch
- 4 Connection terminals

For drive with printed circuit board connector:

- 5 Cable entry plate (see accessories page 38)
- 6 Cover

For drive with industrial connector:

- 7 Plate for connecting I/O and the Safe Torque Off function (see accessories page 40)
- 8 Cover for connecting the 24/48 V $\bar{\text{V}}$ power supply and the communication bus (see accessories page 40)

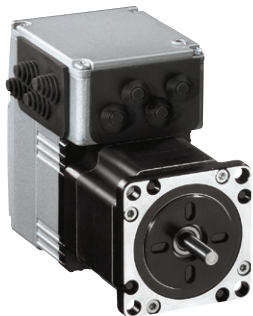
Note: I/O connection plate equipped with industrial connectors for:

DeviceNet and Modbus TCP communication bus (1 round connector for IN and OUT signals)

EtherCAT, EtherNet/IP and Ethernet POWERLINK communication bus: 2 round connectors (1 round connector for each signal, IN and OUT).

Lexium™ Integrated Drives Motion control

IL●2 for DeviceNet, EtherCAT, EtherNet/IP,
Modbus TCP, Ethernet POWERLINK
ILS2 with 3-phase stepper motor



ILS2 Integrated Drive with 3-phase stepper motor

References													
Example:	I	L	S	2	D	5	7	1	P	B	1	A	0
Motor type S = 3-phase stepper motor	I	L	S	2	D	5	7	1	P	B	1	A	0
Supply voltage 2 = 24...48 V	I	L	S	2	D	5	7	1	P	B	1	A	0
Communication interface D = DeviceNet E = EtherCAT K = EtherNet/IP P = Ethernet POWERLINK T = Modbus TCP	I	L	S	2	D	5	7	1	P	B	1	A	0
Flange size 57 = 57 mm 85 = 85 mm	I	L	S	2	D	5	7	1	P	B	1	A	0
Drive type (1) 1 = ILS2●●●1 2 = ILS2●●●2 3 = ILS2●●●3	I	L	S	2	D	5	7	1	P	B	1	A	0
Winding type (1) P = medium rotation speed T = high rotation speed (2)	I	L	S	2	D	5	7	1	P	B	1	A	0
Connection B = printed circuit board connector C = industrial connector	I	L	S	2	D	5	7	1	P	B	1	A	0
Sensor type 1 = reference pulse sensor (Zero marker)	I	L	S	2	D	5	7	1	P	B	1	A	0
Holding brake A = without holding brake F = with holding brake (3)	I	L	S	2	D	5	7	1	P	B	1	A	0
Gearbox 0 = without gearbox	I	L	S	2	D	5	7	1	P	B	1	A	0

(1) See the main specifications and dimensions according to the type of drive in the table below:

Drive		ILS2●571	ILS2●572	ILS2●573	
Winding type		P	P	T	
Nominal speed of rotation	rpm	1100	900	600	
Maximum torque	Nm	0.45	0.9	1.5	
Holding torque	Nm	0.45	0.9	1.5	
Dimensions (overall in mm)	W x H x D	57.2 x 92.2 x 101.9	57.2 x 92.2 x 115.9	57.2 x 92.2 x 138.9	
Drive		ILS2●851	ILS2●852	ILS2●853	
Winding type		P	P	T	P
Nominal speed of rotation	rpm	600	380	200	300
Maximum torque	Nm	2	4	6	4.5
Holding torque	Nm	2	4	6	4.5
Dimensions (overall in mm)	Without holding brake	W x H x D	85 x 119.6 x 140.6	85 x 119.6 x 170.6	
	With holding brake	W x H x D	85 x 119.6 x 187.3	85 x 119.6 x 217.3	
				85 x 119.6 x 247.3	

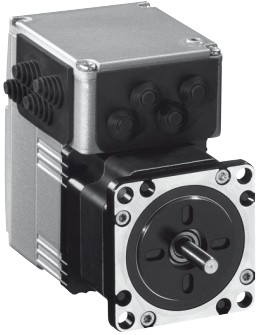
(2) Twinding only available for integrated drive with 85 mm flange (ILS2●853).

(3) Holding brake only available for integrated drive with 85 mm flange (ILS2●85).

Note: See all the data (specifications, dimensions) on our website www.schneider-electric.com.

Lexium™ Integrated Drives Motion control

ILS1 with I/O interface for motion sequence



ILS1 with I/O interface for motion sequence

Introduction

Lexium ILS1 Integrated Drives with I/O interface for motion sequence, consist of a 3-phase stepper motor and control electronics.

These ILS1 Integrated Drives with this 3-phase stepper motor provide high torques at low speeds of rotation. They are mainly used in rotation speed mode and have excellent stability characteristics for high resolution positioning.

The control section consists of control electronics and a power stage, that have a common power supply and are thermally isolated from the motor. These control electronics are not electrically isolated.

These integrated drives can operate on a 24 V to 36 V $\overline{\text{V}}$ supply.

Lexium ILS1 Integrated Drives with I/O interface for motion sequence have numerous interfaces:

- Multifunction interface for selecting up to 16 movement instruction sets
- Interface for four 24 V signals, configurable as outputs or inputs
- RS 485 serial link interface for ease of maintenance
- Interface for the integrated Safe Torque Off function

They are wired via a printed circuit board connector.

The commissioning of drives with stepper motor is simplified, as they do not require any configuration of the control loop.

Instruction sets

Up to 16 instruction sets, containing movement instructions, can be selected and activated directly or sequentially via the logic inputs.

Movement instructions can contain homing commands or positioning instructions. This allows motion sequences to be saved in the drive and controlled via the logic inputs.

The instruction sets are entered and the drive parameters are set using Lexium CT PC software.

Lexium™ Integrated Drives Motion control

ILS1 with I/O interface for motion sequence

Interfaces

Multifunction interface

The multifunction interface is used to select and activate up to 16 instruction sets, containing movement instructions, via the logic inputs. It is also possible to set the parameters of specific start functions.

RS 485 serial link interface

The RS 485 interface is used to connect an RS 485 serial link during configuration, commissioning or maintenance. It is used to connect the Lexium CT PC software with a direct link, via an RS 485/USB converter, to access the fault log, temperature control and various other functions.

Interface for 24 V signals

Four 24 V signals are available, configurable as inputs or outputs via the parameter switch.

They can also be used to set the parameters of functions, such as limit switch detection, and can be used by the master controller.

The 24 V power for the outputs is provided internally via the integrated drive's power supply.

Interface for Safe Torque Off (Power Removal) safety function

The Safe Torque Off (Power Removal) safety function enables a category 0 or 1 stop to be performed in accordance with standard IEC/EN 60204-1 and/or prevents unintended motor operation in accordance with standard IEC/EN 61508 level SIL2, ISO 13849-1 performance level "d" (PL d) and IEC/EN 61800-5-2 (STO).

No additional power protection option is necessary. The Lexium ILS1 Integrated Drive can remain powered up, which reduces the system costs and the restart time.

The Safe Torque Off function is activated via two redundant 24 V input signals (active in OFF state).

Special technical features

- High continuous stall torque
- Good speed stability characteristics
- High encoder accuracy (0.018°)
- Integrated holding brake available as an option for ILS1M85 Integrated Drive
- Planetary gearbox available as an option

Lexium™ Integrated Drives Motion control

ILS1 with I/O interface for motion sequence

“Motion sequence” operating mode

Introduction

In “Motion sequence” operating mode, up to 16 movement instruction sets can be activated directly or sequentially via the logic input signals. The movement instructions can contain homing or positioning parameters, allowing a motion sequence to be saved in the drive, and controlled via the logic input signals.

The instruction sets are entered and the drive parameters set using the “Lexium CT” PC commissioning software.

Direct selection of movement instructions

Direct selection of movement instructions is used when a master controller is controlling the sequencing of the various instruction sets. The instruction set to be processed is selected and activated via the logic inputs.

Sequential selection of movement instructions

Sequential selection of movement instructions is used for processing simple motion sequences. Instruction sets are sequenced by entering a waiting time, a transition condition and the next instruction set.

An example of a transition condition: rising edge on the START logic input.

A motion sequence can also be executed cyclically, with or without return to the initial position.

Processing status of a movement instruction

The status of the movement instruction is indicated via the Handshake output. It is also possible to indicate an internal processing status such as “Drive in motion” via an additional output signal.

Selection of the motion profile

Speeds and accelerations are saved in motion profiles. The movement instruction set contains the list of motion profiles.

Other operating modes

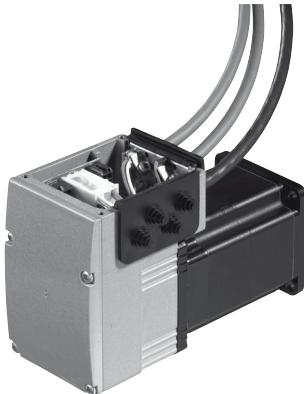
Other operating modes can be set via the communication bus:

- Manual (JOG)
- Point-to-point
- Homing

Lexium™ Integrated Drives

Motion control

ILS1 with I/O interface for motion sequence



Integrated drive with printed circuit board connectors

Connections

Lexium ILS1 Integrated Drives are connected via printed circuit board connectors.

Printed circuit board connectors

Printed circuit board connectors are used to connect the multifunction interface, the RS 485 serial link, the interface for 24 V signals and the Safe Torque Off function, as well as the power supply.

This integrated drive is connected via two cable entry plates, to be ordered separately (see accessories page 38).

Compliance with international standards and certifications

The Lexium Integrated Drives offer has been developed in accordance with strict international standards and recommendations for variable speed electrical power drive products, in particular IEC/EN 61800-3 (immunity to disturbance related to high frequency signals transmitted along cables) and IEC/EN 50178 (vibration resistance).

Compliance with electromagnetic compatibility requirements has been incorporated in the design of this integrated drive. The entire product range conforms to international standard IEC/EN 61800-3:2001, environment 2.

These integrated drives carry the CE mark in accordance with the European machinery directive (98/37/EEC) and the European EMC directive (2004/108/EEC).

The entire product range is cULus certified (United States and Canada).

It is also TÜV certified in accordance with the safety standards for medical devices and equipment. This certification covers:

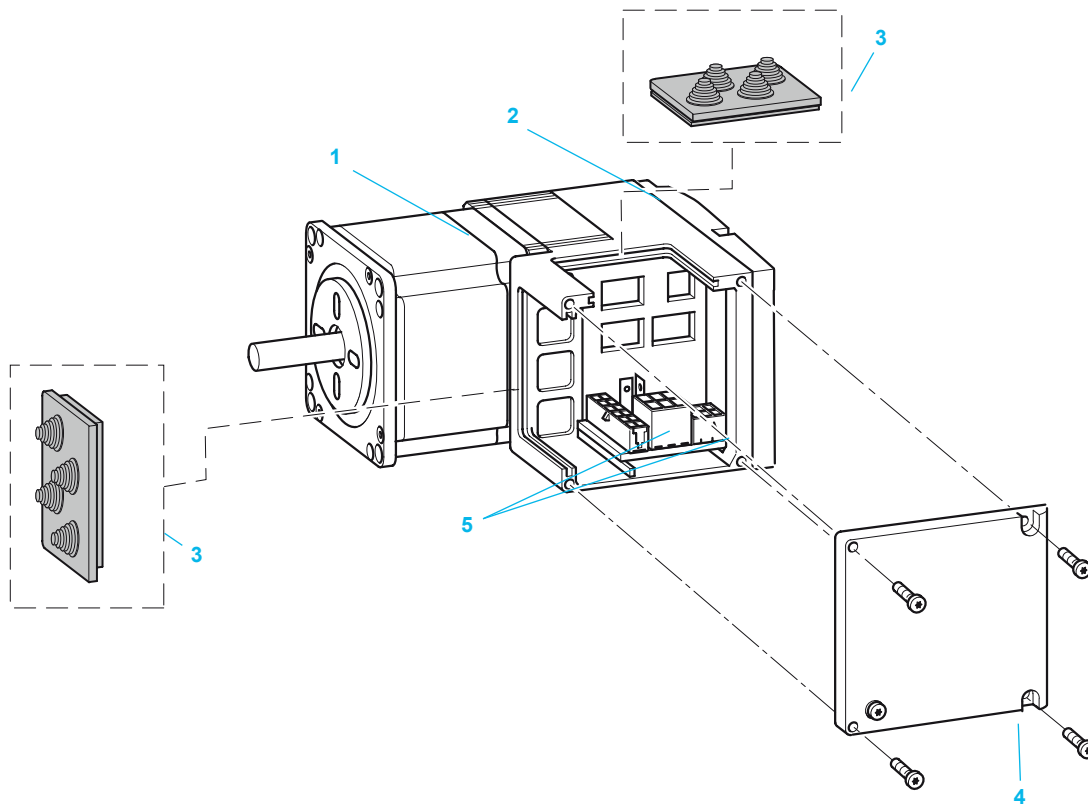
- Functional safety of electrical/electronic/programmable electronic safety-related systems (IEC 61508: 2000; SIL 2)
- Safety of machinery – functional safety of safety-related electrical, electronic and programmable electronic control systems (IEC 62061: 2005; SILcl2)
- Safety of machinery – safety-related parts of electronic control systems – part 1: General principles for design (ISO 13849-1: 2006; PL d (category 3))

Lexium™ Integrated Drives Motion control

ILS1 with I/O interface for motion sequence
ILS1 with 3-phase stepper motor

Description

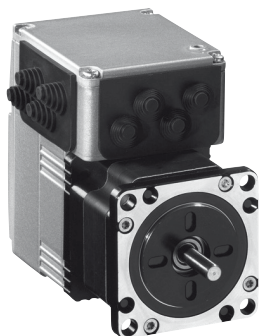
Lexium ILS1 Integrated Drives with I/O interface for motion sequence consist of control electronics and a 3-phase stepper motor. They are available with printed circuit board connectors. For ILS1M85 drives, an integrated holding brake is available as an option.



- 1 3-phase stepper motor
- 2 Electronic unit
- 3 Cable entry plate (see accessories page 38)
- 4 Cover
- 5 Connection terminals

Lexium™ Integrated Drives Motion control

ILS1 with I/O interface for motion sequence
ILS1 with 3-phase stepper motor



ILS1 Integrated Drive with I/O interface for motion sequence

References													
Example:	I	L	S	1	M	5	7	1	P	B	1	A	0
Motor type S = 3-phase stepper motor	I	L	S	1	M	5	7	1	P	B	1	A	0
Supply voltage 1 = 24...36 V	I	L	S	1	M	5	7	1	P	B	1	A	0
Interface M = I/O interface for motion sequence	I	L	S	1	M	5	7	1	P	B	1	A	0
Flange size 57 = 57 mm 85 = 85 mm	I	L	S	1	M	5	7	1	P	B	1	A	0
Drive type (1) 1 = ILS1M●●1 2 = ILS1M●●2 3 = ILS1M●●3	I	L	S	1	M	5	7	1	P	B	1	A	0
Winding type (1) P = medium rotation speed T = high rotation speed (2)	I	L	S	1	M	5	7	1	P	B	1	A	0
Connection B = printed circuit board connector	I	L	S	1	M	5	7	1	P	B	1	A	0
Sensor type 1 = reference pulse sensor (Zero marker)	I	L	S	1	M	5	7	1	P	B	1	A	0
Holding brake A = without holding brake F = with holding brake (3)	I	L	S	1	M	5	7	1	P	B	1	A	0
Gearbox 0 = without gearbox	I	L	S	1	M	5	7	1	P	B	1	A	0

(1) See the main specifications and dimensions according to the type of drive in the table below:

Drive		ILS1M571	ILS1M572	ILS1M573	
Winding type		P	P	P	
Nominal speed of rotation	rpm	1000	600	450	
Maximum torque	Nm	0.45	0.9	1.5	
Holding torque	Nm	0.51	1.02	1.7	
Dimensions (overall in mm)	W x H x D	57.2 x 92.2 x 101.9	57.2 x 92.2 x 115.9	57.2 x 92.2 x 138.9	
Drive		ILS1M851	ILS1M852	ILS1M853	
Winding type		P	P	P	T
Nominal speed of rotation	rpm	450	200	120	300
Maximum torque	Nm	2	4	6	4.5
Holding torque	Nm	2	4	6	4.5
Dimensions (overall in mm)	Without holding brake	W x H x D	85 x 119.6 x 140.6	85 x 119.6 x 170.6	85 x 119.6 x 200.6
	With holding brake	W x H x D	85 x 119.6 x 187.3	85 x 119.6 x 217.3	85 x 119.6 x 247.3

(2) Twinding only available for integrated drive with 85 mm flange (ILS1M853).

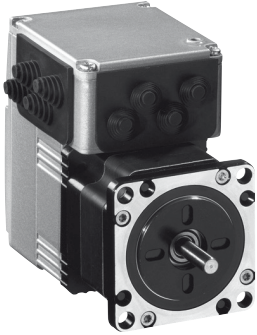
(3) Holding brake only available for integrated drive with 85 mm flange (ILS1M85).

Note: See all the data (specifications, dimensions) on our website www.schneider-electric.com.

Lexium™ Integrated Drives

Motion control

ILS1 with pulse/direction (P/D) interface



ILS1 with pulse/direction (P/D) interface

Introduction

ILS1 Integrated Drives consist of a 3-phase stepper motor and control electronics with pulse/direction (P/D) interface. The pulse/direction (P/D) signals from a master controller – for example, a Lexium Controller, or the A/B signals from an encoder – are converted directly into a movement.

ILS1 Integrated Drives with 3-phase stepper motor provide high torques at low speeds of rotation. They are mainly used in rotation speed mode and have excellent speed stability characteristics for high resolution positioning.

The control section consists of control electronics and a power stage that have a common power supply and are thermally insulated from the motor. These control electronics are not electrically isolated.

ILS1 Integrated Drives can operate on a 24 V to 36 V $\overline{\text{V}}$ supply.

ILS1 Integrated Drives control the stepper motor according to a reference value. This reference value is sent to the multifunction interface by a master controller or an external master encoder.

The number of steps per turn is set via the parameter switch.

ILS1 Integrated Drives with pulse/direction (P/D) interface have numerous interfaces:

- Multifunction interface
 - Interface for four 24 V signals
 - RS 485 serial link interface
 - Interface for the integrated Safe Torque Off function
- They are wired via a printed circuit board connector.

The commissioning of ILS1 drives with stepper motor is simplified, as they do not require any configuration of the control loop.

Interfaces

Multifunction interface

The multifunction interface takes one of the following signals, depending on the integrated drive model:

- 24 V signals separated by optical coupler (ILS1U)
- 5 V signals separated by optical coupler (ILS1V)
- 5 V differential signals without electrical isolation (ILS1W)

The reference values are sent via two signals, either as pulse/direction (P/D) signals, or as type A/B encoder signals.

The other signals have the following functions:

- Activation or locking of the power stage, and activation or locking of the indexing pulse
- Setting the number of steps or setting the motor phase current

RS 485 serial link interface

The RS 485 signal interface is used to connect an RS 485 serial link during configuration, commissioning or maintenance.

This signal interface is used to connect the Lexium CT PC software with a direct link, via an RS 485/

RS 232 or RS 485/USB converter, to access the fault log, temperature control and various other functions.

Interface for 24 V signals

Two input signals and two output signals are available.

The input signals have the following functions:

- Setting the number of steps
- Activation or locking of the power stage, and activation or locking of the indexing pulse

The output signals have the following functions:

- Drive ready
- Display a fault or indexing pulse

The 24 V power for the outputs is provided internally via the integrated drive's power supply.

Lexium™ Integrated Drives

Motion control

ILS1 with pulse/direction (P/D) interface

Interfaces (continued)

Interface for Safe Torque Off (Power Removal) safety function

The Safe Torque Off (Power Removal) safety function enables a category 0 or 1 stop to be performed in accordance with standard IEC/EN 60204-1 and/or prevents unintended motor operation in accordance with standard IEC/EN 61508 level SIL2, ISO 13849-1 performance level “d” (PL d) and IEC/EN 61800-5-2 (STO).

No additional power protection option is necessary. The Lexium ILS1 Integrated Drive can remain powered up, which reduces the system costs and the restart time.

The Safe Torque Off function is activated via two redundant 24 V input signals (active in OFF state).

Special technical features

- High continuous stall torque
- Good speed stability characteristics
- High encoder accuracy (0.018°)
- Integrated holding brake available as an option for the ILS1●85 Integrated Drive
- Planetary gearbox available as an option

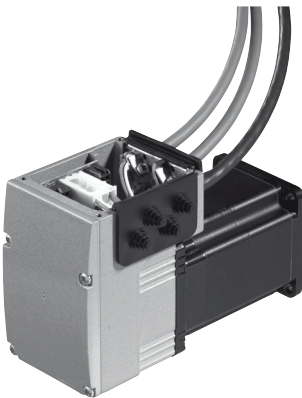
Connections

Lexium ILS Integrated Drives are connected via printed circuit board connectors.

Printed circuit board connectors

Printed circuit board connectors are used to connect the multifunction interface, the RS 485 serial link, the interface for 24 V signals and the Safe Torque Off function, as well as the power supply.

The ILS1 integrated drive is connected via two plates for cable entry plates, to be ordered separately (see accessories page 38).



Integrated drive with printed circuit board connectors

Main functions

Configuration by parameter switch

The following functions can be set on ILS1 Integrated Drives via the parameter switch:

- Number of steps
- Motor phase current
- Reduction of motor phase current
- Input signal functions:
 - Transmission of the reference value via pulse/direction (PULSE/DIR) or encoder (A/B) signals
 - Activation/locking of the power stage (ENABLE/GATE input signal)
 - Activation/locking of the indexing pulse (ENABLE/GATE input signal)
 - Modulation of the motor phase current via a PWM signal (PWM/STEP2_INV input signal)
 - Increase/decrease the number of steps by a factor of 10 (PWM/STEP2_INV input signal)
- Output signal functions:
 - Display a detected fault (FAULT/INDEXPULSE output signal)
 - Indexing pulse signal (FAULT/INDEXPULSE output signal)
 - “Drive ready” signal (ACTIVE output signal)
- Blocking detection
- Activation of the RS 485 line terminator
- Activation/deactivation of the Safe Torque Off function

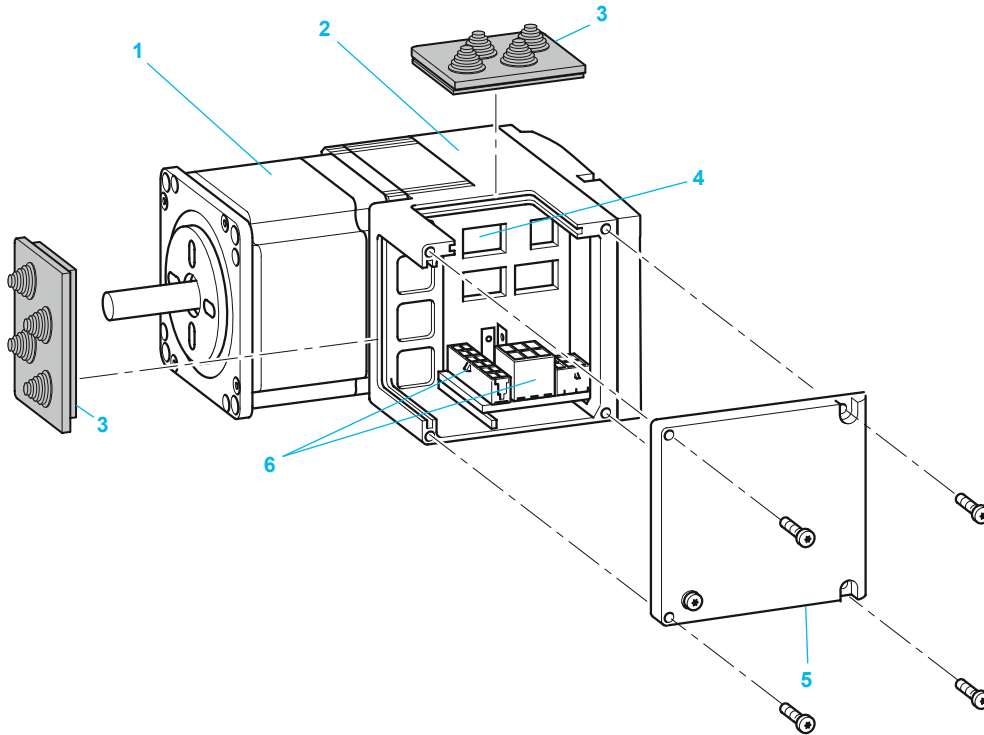
Lexium™ Integrated Drives

Motion control

ILS1 with pulse/direction (P/D) interface
ILS1 with 3-phase stepper motor

Description

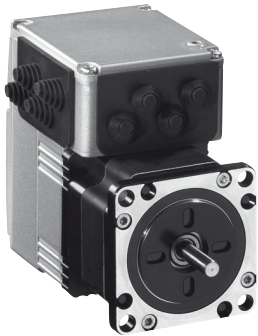
ILS1 Integrated Drives consist of control electronics with pulse/direction (P/D) interface and a 3-phase stepper motor. They are available with printed circuit board connectors. For ILS1M85 Integrated Drives, an integrated holding brake is available as an option.



- 1 3-phase stepper motor
- 2 Electronic unit
- 3 Cable entry plate (see accessories page 38)
- 4 Parameter switch
- 5 Cover
- 6 Connection terminals

Lexium™ Integrated Drives Motion control

ILS1 with pulse/direction (P/D) interface
ILS1 with 3-phase stepper motor



ILS1 Integrated Drive with pulse/direction interface

References													
Example:	I	L	S	1	U	5	7	1	P	B	1	A	0
Motor type S = 3-phase stepper motor	I	L	S	1	U	5	7	1	P	B	1	A	0
Supply voltage 1 = 24...36 V	I	L	S	1	U	5	7	1	P	B	1	A	0
Interface U = 24 V pulse/direction signals, separated by optical coupler V = 5 V pulse/direction signals, separated by optical coupler W = 5 V pulse/direction signals, RS 422	I	L	S	1	U	5	7	1	P	B	1	A	0
Flange size 57 = 57 mm 85 = 85 mm	I	L	S	1	U	5	7	1	P	B	1	A	0
Drive type (1) 1 = ILS1●●●1 2 = ILS1●●●2 3 = ILS1●●●3	I	L	S	1	U	5	7	1	P	B	1	A	0
Winding type P = medium rotation speed T = high rotation speed (2)	I	L	S	1	U	5	7	1	P	B	1	A	0
Connection B = printed circuit board connector	I	L	S	1	U	5	7	1	P	B	1	A	0
Sensor type 1 = reference pulse sensor (Zero marker)	I	L	S	1	U	5	7	1	P	B	1	A	0
Holding brake A = without holding brake F = with holding brake (3)	I	L	S	1	U	5	7	1	P	B	1	A	0
Gearbox 0 = without gearbox	I	L	S	1	U	5	7	1	P	B	1	A	0

(1) See the main specifications and dimensions according to the type of drive in the table below:

Drive		ILS1●571	ILS1●572	ILS1●573	
Winding type		P	P	P	
Nominal speed of rotation	rpm	1000	600	450	
Maximum torque	Nm	0.45	0.9	1.5	
Holding torque	Nm	0.51	1.02	1.7	
Dimensions (overall in mm)	W x H x D	57.2 x 92.2 x 101.9	57.2 x 92.2 x 115.9	57.2 x 92.2 x 138.9	
Drive		ILS1●851	ILS1●852	ILS1●853	
Winding type		P	P	P	T
Nominal speed of rotation	rpm	450	200	120	300
Maximum torque	Nm	2	4	6	4.5
Holding torque	Nm	2	4	6	4.5
Dimensions (overall in mm)	Without holding brake	W x H x D	85 x 119.6 x 140.6	85 x 119.6 x 170.6	85 x 119.6 x 200.6
	With holding brake	W x H x D	85 x 119.6 x 187.3	85 x 119.6 x 217.3	85 x 119.6 x 247.3

(2) Twinding only available for integrated drive with 85 mm flange (ILS1●853).

(3) Holding brake only available for integrated drive with 85 mm flange (ILS1●85).

Note: See all the data (specifications, dimensions) on our website www.schneider-electric.com.

Lexium™ Integrated Drives Motion control

Accessories for ILA, ILE and ILS
Integrated Drives



IP 54 sealing plate VW3L10000N●●



Kit with plate for cable entries and sealing plate
VW3L10222



Kit for RS 485 serial link connection VW3L1R000



Plates with cable entries VW3L10100N●

Installation accessories

Description	Order in lots of	Unit reference	Weight kg
IP 54 sealing plates			
Sealing plates	10	VW3L10000N10	–
2 plates are required per integrated drive	20	VW3L10000N20	–
	50	VW3L10000N50	–

Kit with cable entry plate and IP 54 sealing plate

Kit includes:	–	VW3L10222	–
1 plate with two M16 cable entries for 2 cables diameter 5 to 9 mm			
One IP 54 sealing plate			

Installation kit

Installation kit for connecting the communication bus, the power supply and the Safe Torque Off function. Consists of a cable entry plate, crimp contacts, crimp connectors, connector housings and shielding film.	–	VW3L10111	–
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Kit for RS 485 serial link connection (commissioning)

Kit includes:	–	VW3L1R000	–
1 plate equipped with:			
<input type="checkbox"/> One M12 female connector (5-way)			
<input type="checkbox"/> One M12 male connector (5-way)			
One IP 54 sealing plate			

Additional accessory

Set of connectors (CANopen/RS 485)	–	VW3L5F000	–
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Cordsets for RS 485 serial link connection (commissioning)

Description	Length m	Unit reference	Weight kg
Pre-assembled cordset with: Integrated drive end: 1 connector for RS 485 serial link Other end: flying leads	3	VW3L1R000R30	–
Pre-assembled cordset with: Integrated drive end: 1 connector for RS 485 serial link Other end: 1 RJ45 connector for RJ45/USB cable TCSMCNAM3M002P (commissioning via a PC)	3	VW3L1T000R30	–

Accessories for integrated drives with printed circuit board connectors

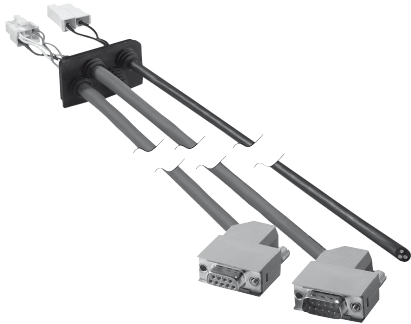
Plates with cable entries

Description	Order in lots of	Unit reference	Weight kg
Plates	2	VW3L10100N2	–
for 4 cables diameter 3 to 9 mm. 2 plates are required per integrated drive. They provide the seal, the mechanical catch and connection of the shielding.	10	VW3L10100N10	–

Lexium™ Integrated Drives

Motion control

Accessories for ILS, ILE and ILS Integrated Drives



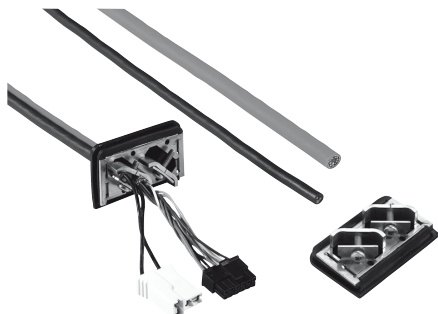
Cordset for interfaces for communication bus and power supply VW3L2001R30



Cordset for ILS1 Integrated Drives with I/O interface VW3L2M001R00



Cordset for ILS1 Integrated Drives with I/O interface and plate for I/O and safety signals VW3L2M211R00



Cordset for ILS1 Integrated Drive with pulse/direction interface VW3L2U001R00

Accessories for integrated drives with printed circuit board connectors (continued)

Cordsets for Safe Torque Off signals

Description	For use with	Length m	Unit reference	Weight kg
Pre-assembled cordsets with:	–	3	VW3L20010R30	–
Integrated drive end:	–	5	VW3L20010R50	–
1 connector for Safe Torque Off function	–	10	VW3L20010R100	–
Other end: flying leads	–	15	VW3L20010R150	–
		20	VW3L20010R200	–

Cordsets for communication bus interfaces (CANopen, PROFIBUS DP, RS 485, DeviceNet) and power supply

Pre-assembled cordsets with:	CANopen	3	VW3L2F001R30	–
Integrated drive end: cable entry and mechanical catch.	PROFIBUS DP	3	VW3L2B001R30	–
For power supply and communication bus.	RS 485	3	VW3L2R001R30	–
Other end: flying leads for power supply and 9-way SUB-D connector for communication bus.	DeviceNet	3	VW3L2D001R30	–

Cordsets for communication bus interfaces (EtherCAT, EtherNet/IP, Modbus TCP, Ethernet POWERLINK) and power supply

Pre-assembled cordsets with:	EtherCAT	3	VW3L2E001R30	–
Integrated drive end: cable entry and mechanical catch.	EtherNet/IP	3	VW3L2K001R30	–
For power supply and communication bus.	Modbus TCP	3	VW3L2T001R30	–
Other end:	EtherNet POWERLINK	3	VW3L2P001R30	–
<input type="checkbox"/> flying leads for power supply				
<input type="checkbox"/> RJ45 connector for communication bus				

Cordsets for ILS1 Integrated Drives with I/O interface for motion sequence

Pre-assembled cordsets with:	3	VW3L2M001R30	–
Integrated drive end: plate with cable entry and mechanical catch for control via data sets.	5	VW3L2M001R50	–
For power supply and I/O signals.	10	VW3L2M001R100	–
Other end: flying leads	15	VW3L2M001R150	–
	20	VW3L2M001R200	–

Cordsets for ILS1 Integrated Drives with I/O interface for motion sequence and plate for I/O signals and Safe Torque Off signals

Pre-assembled cordsets with:	3	VW3L2M211R30	–
Integrated drive end: plate with cable entry and mechanical catch for control via data sets.	5	VW3L2M211R50	–
For power supply and I/O signals.	10	VW3L2M211R100	–
Other end: flying leads	15	VW3L2M211R150	–
	20	VW3L2M211R200	–

Additional plate equipped with:
Two connectors for I/O signals
One M8 connector for Safe Torque Off signals

Cordsets for ILS1 Integrated Drives with pulse/direction (P/D) interface

Pre-assembled cordsets with:	3	VW3L2U001R30	–
Integrated drive end: plate with cable entry and mechanical catch.	5	VW3L2U001R50	–
For power supply and pulse/direction (P/D) or A/B encoder signals.	10	VW3L2U001R100	–
Other end: flying leads	15	VW3L2U001R150	–
	20	VW3L2U001R200	–

Lexium™ Integrated Drives

Motion control

Accessories for ILA, ILE and ILS Integrated Drives



Kit for I/O signals VW3L40300



Kit for I/O signals and Safe Torque Off signals VW3L40210



Kit for I/O signals and Safe Torque Off signals VW3L40420



Cordsets for Safe Torque Off signals VW3L30010R●●

Accessories for integrated drives with industrial connectors

Description	Reference	Weight kg
Cover for connecting the power supply and the communication bus		
Cover for connecting the power supply and the communication bus:		
PROFIBUS DP	VW3L1B001N01	—
DeviceNet	VW3L1D001N01	—
EtherNet/IP, EtherCAT, EtherNet POWERLINK	VW3L1E001N01	—
CANopen	VW3L1F001N01	—
Modbus TCP	VW3L1T001N01	—
RS 485	VW3L1R001N01	—

Kit for I/O signals

Kit includes:	VW3L40300	—
One plate equipped with three M8 female connectors (3-way) for I/O signals		
One IP 54 sealing plate		

Additional accessory

Set of 3 connectors for connecting I/O	VW3L50300	—
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Kit for Safe Torque Off signals

Kit includes:	VW3L40020	—
One plate equipped with one male and one female M8 connector (4-way) for two Safe Torque Off signals		
One IP 54 sealing plate		

Additional accessory

Cordsets (M8x4) for Safe Torque Off signals (see below for full references)	VW3L30010R●●●	—
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Kit for I/O signals and Safe Torque Off signals

Kit includes:	VW3L40210	—
One plate equipped with:		
□ Two M8 female connectors (3-way) for I/O signals		
□ One M8 male connector (4-way) for Safe Torque Off signals		
One IP 54 sealing plate		

Kit includes:	VW3L40420	—
One plate equipped with:		
□ Two M8 female connectors (3-way) for I/O signals		
□ One M8 male connector (4-way) for Safe Torque Off signals		
One plate equipped with:		
□ Two M8 female connectors (3-way) for I/O signals		
□ One M8 female connector (4-way) for Safe Torque Off signals		

Additional accessories

Set of 2 connectors for I/O	VW3L50200	—
Connector for Safe Torque Off signals	VW3L50010	—
Cordset (M8x4) for Safe Torque Off signals (see below for full references)	VW3L30010R●●●	—

Cordsets for Safe Torque Off signals

Description	Length m	Reference	Weight kg
Cordsets equipped with one M8 female connector (4-way) for connecting Safe Torque Off signals	3	VW3L30010R30	—
	5	VW3L30010R50	—
	10	VW3L30010R100	—
	15	VW3L30010R150	—
	20	VW3L30010R200	—

Lexium™ Integrated Drives

Motion control

Accessories for ILA, ILE and ILS
Integrated Drives



Power cordsets VW3L30001R●●



Connector for Safe Torque Off signals VW3L50010



Set of connectors for I/O signals VW3L50200



Set of connectors for EtherCAT bus VW3L5E000



Connector for DeviceNet bus VW3L5D000

Accessories for integrated drives with industrial connectors (continued)

Description	Length m	Reference	Weight kg
Power cordsets			
Pre-assembled cordsets with:	3	VW3L30001R30	–
Integrated drive end: 1 connector for power supply	5	VW3L30001R50	–
Other end: flying leads	10	VW3L30001R100	–
DESINA compliant	15	VW3L30001R150	–
	20	VW3L30001R200	–

Connector for Safe Torque Off signals

Connector, M8 round (4-way) for creating cordsets for Safe Torque Off signals	VW3L50010	–
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Set of 2 connectors for I/O signals

Set consisting of: Two M8 round connectors (3-way)	VW3L50200	–
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Set of 3 connectors for I/O signals

Set consisting of: Three M8 round connectors (3-way)	VW3L50300	–
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Set of CANopen/RS 485 connectors for IL●1 Integrated Drives

Set consisting of: One M12 round male connector (A-coded) One M12 round female connector (A-coded) One M12 blanking plug	VW3L5F000	–
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Set of PROFIBUS DP connectors for IL●1 Integrated Drives

Set consisting of: One M12 round male connector (B-coded) One M12 round female connector (B-coded) One M12 blanking plug	VW3L5B000	–
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Set of EtherCAT connectors

Set consisting of: Two M12 round male connectors (4-way), (D-coded) One M12 blanking plug	VW3L5E000	–
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Set of EtherNet/IP connectors

Set consisting of: Two M12 round male connectors (4-way), (D-coded) One M12 blanking plug	VW3L5K000	–
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Set of Ethernet POWERLINK connectors

Set consisting of: Two M12 round male connectors (4-way), (D-coded) One M12 blanking plug	VW3L5P000	–
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DeviceNet connector

Female connector, M12 DeviceNet (5-way), (A-coded)	VW3L5D000	–
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Modbus TCP connector

Female connector, M12 Modbus TCP (4-way), (D-coded)	VW3L5T000	–
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Lexium™ Integrated Drives Motion control

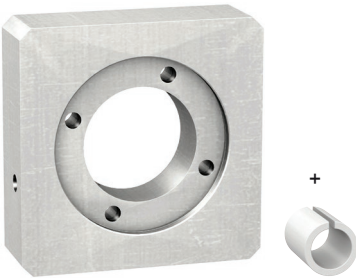
Option: GB● planetary gearboxes



GBX planetary gearbox



GBY angular planetary gearbox



GBK adaptor kit

Introduction

In many cases, motion control requires the use of a planetary gearbox to adapt speeds of rotation and torque, while providing the precision demanded by the application.

To meet these requirements, Schneider Electric has chosen to use Neugart GBX planetary gearboxes and GBY angular planetary gearboxes which are ideal for integrated drives. These gearboxes are lubricated for life, and are easy to install and operate.

Combining integrated drives with the most adaptable planetary gearboxes makes them very easy to mount, and ensures simple, risk-free operation.

These gearboxes are designed for applications which are not susceptible to mechanical backlash. They have a keyed shaft, are lubricated for life and conform to IP 54 degree of protection.

GBX planetary gearboxes are available in three sizes (GBX 40, GBX 60, GBX 80) with 11 reduction ratios (3:1 ... 40:1).

GBY angular planetary gearboxes are available in two sizes (GBY 60, GBY 80) with 7 reduction ratios.

GBK adaptor kits are also offered for assembling the integrated drive and the GB● planetary gearbox (see page 45).

This adapter kit includes:

- An adaptor plate
- Shaft end adaptor, depending on the model (depends on the integrated drive/ planetary gearbox combination)
- Mounting accessories for mounting the plate on the planetary gearbox
- Mounting accessories for mounting the integrated drive

The tables on pages 43 and 44 give the most appropriate integrated drive/gearbox combinations.

For other combinations or any additional information about the specifications of the integrated drives, see the integrated drive data sheets or our website www.schneider-electric.com.

References



GBX planetary gearbox

Size	Reduction ratio	Reference (1)	Weight kg
GBX 40	3:1, 5:1 and 8:1	GBX040●●●K	0.350
GBX 60	3:1, 4:1, 5:1 and 8:1	GBX060●●●K	0.900
	9:1, 12:1, 15:1, 16:1, 20:1, 25:1 and 40:1	GBX060●●●K	1.100
GBX 80	3:1, 4:1, 5:1 and 8:1	GBX080●●●K	2.100
	9:1, 12:1, 15:1, 16:1, 20:1 and 25:1	GBX080●●●K	2.600

(1) To order a GBY angular planetary gearbox, complete each of the above references as follows:

		GBX		●●●	●●●	K
Size	Housing diameter	40 mm	040			
		60 mm	060			
		80 mm	080			
Reduction ratio	3:1				003	
	5:1				005	
	8:1				008	
	9:1				009	
	12:1				012	
	15:1				015	
	16:1				016	
	20:1				020	
	25:1				025	
	40:1				040	
Mounting with GBK adaptor kit (see page 45)						K

Integrated drive/GBX planetary gearbox combinations

Reduction ratios from 3:1 to 40:1

Type of integrated drive	Reduction ratio										
	3:1	4:1	5:1	8:1	9:1	12:1	15:1	16:1	20:1	25:1	40:1
ILA1●571T	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60
ILA1●571P	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60
ILA1●572T	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60
ILA1●572P	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60
ILA2●571T	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60
ILA2●571P	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60
ILA2●572T	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60
ILA2●572P	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60
ILE1●661P	GBX 40	–	GBX 40	GBX 40	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60
ILE2●661P	GBX 40	–	GBX 40	GBX 40	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60
ILE2●662P	GBX 40	–	GBX 40	GBX 40	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60
ILS1●571P	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60
ILS1●572P	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60
ILS1●573P	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60
ILS1●851P	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	–
ILS1●852P	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	–
ILS1●853P	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	–
ILS1●853T	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	–
ILS2●571P	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60
ILS2●572P	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60
ILS2●573P	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60	GBX 60
ILS2●851P	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	–
ILS2●852P	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	–
ILS2●853P	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	–
ILS2●853T	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	GBX 80	–

GBX 60 For this combination, you must check that the application will not exceed the maximum gearbox output torque (see the values on our website www.schneider-electric.com).

Lexium™ Integrated Drives Motion control

Option: GBY planetary gearboxes

References



GBY angular planetary gearbox

Size	Reduction ratio	Reference (1)	Weight kg
GBY 60	3:1, 4:1, 5:1 and 8:1	GBY060●●●K	4.400
	12:1, 20:1 and 40:1	GBY060●●●K	5.000
GBY 80	3:1, 4:1, 5:1 and 8:1	GBY080●●●K	12.000
	12:1 and 20:1	GBY080●●●K	14.000

(1) To order a GBY angular planetary gearbox, complete each of the above references as follows:

	GBY	●●●	●●●	K
Size	60 mm	060		
	80 mm	080		
Reduction ratio	3:1		003	
	4:1		004	
	5:1		005	
	8:1		008	
	12:1		012	
	20:1		020	
40:1		040		
Mounting with GBK adaptor kit (see page 45)				K

Integrated drive/GBY angular planetary gearbox combinations

Reduction ratios from 3:1 to 40:1

Type of integrated drive	Reduction ratio						
	3:1	4:1	5:1	8:1	12:1	20:1	40:1
ILA1●571T	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60
ILA1●571P	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60
ILA1●572T	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60
ILA1●572P	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60
ILA2●571T	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60
ILA2●571P	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60
ILA2●572T	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60
ILA2●572P	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60
ILE1●661P	-	-	-	-	GBY 60	GBY 60	GBY 60
ILE2●661P	-	-	-	-	GBY 60	GBY 60	GBY 60
ILE2●662P	-	-	-	-	GBY 60	GBY 60	GBY 60
ILS1●571P	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60
ILS1●572P	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60
ILS1●573P	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60
ILS1●851P	GBY 80	GBY 80	GBY 80	GBY 80	GBY 80	GBY 80	-
ILS1●852P	GBY 80	GBY 80	GBY 80	GBY 80	GBY 80	GBY 80	-
ILS1●853P	GBY 80	GBY 80	GBY 80	GBY 80	GBY 80	GBY 80	-
ILS1●853T	GBY 80	GBY 80	GBY 80	GBY 80	GBY 80	GBY 80	-
ILS2●571P	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60
ILS2●572P	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60
ILS2●573P	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60	GBY 60
ILS2●851P	GBY 80	GBY 80	GBY 80	GBY 80	GBY 80	GBY 80	-
ILS2●852P	GBY 80	GBY 80	GBY 80	GBY 80	GBY 80	GBY 80	-
ILS2●853P	GBY 80	GBY 80	GBY 80	GBY 80	GBY 80	GBY 80	-
ILS2●853T	GBY 80	GBY 80	GBY 80	GBY 80	GBY 80	GBY 80	-

GBY 060

For these combinations, you must check that the application will not exceed the maximum gearbox output torque (see the values on our website www.schneider-electric.com).

References					
To order a GBK adaptor kit (1), complete each reference as follows:					
	GBK	●●●	●●●	●	F
Size of GBX or GBY planetary gearbox (housing diameter)	40 mm	040			
	60 mm	060			
	80 mm	080			
Associated integrated drive	ILA●●57, ILS●●57		057		
	ILE●●66		066		
	ILS●●85		085		
Compatibility	All types of motor			0	
	1 or 2 stage motors			2	
	3 stage motor			3	
Integrated drive adaptation	For ILA Integrated Drive				A
	For ILE Integrated Drive				E
	For ILS Integrated Drive				S

Integrated drive/GBK adaptor kit combination										
Type of gearbox	ILA●●571	ILA●●572	ILE1●661	ILE2●662	ILS●●571	ILS●●572	ILS●●573	ILS●●851	ILS●●852	ILS●●853
GBK0600570A	Compatible	Compatible	Not compatible	Not compatible	Not compatible	Not compatible	Not compatible	Not compatible	Not compatible	Not compatible
GBK0400660E	Not compatible	Not compatible	Compatible	Compatible	Not compatible	Not compatible	Not compatible	Not compatible	Not compatible	Not compatible
GBK0600660E	Not compatible	Not compatible	Compatible	Compatible	Not compatible	Not compatible	Not compatible	Not compatible	Not compatible	Not compatible
GBK0600572S	Not compatible	Not compatible	Not compatible	Not compatible	Compatible	Compatible	Not compatible	Not compatible	Not compatible	Not compatible
GBK0600573S	Not compatible	Not compatible	Not compatible	Not compatible	Not compatible	Not compatible	Compatible	Not compatible	Not compatible	Not compatible
GBK0800852S	Not compatible	Not compatible	Not compatible	Not compatible	Not compatible	Not compatible	Not compatible	Compatible	Compatible	Not compatible
GBK0800853S	Not compatible	Not compatible	Not compatible	Not compatible	Not compatible	Not compatible	Not compatible	Not compatible	Not compatible	Compatible

Compatible
 Not compatible

(1) Weight of adaptor kit:
 GBK0400660E: 0.244 kg
 GBK0600570A: 0.210 kg
 GBK0600572S: 0.223 kg
 GBK0600573S: 0.218 kg
 GBK0600660E: 0.255 kg
 GBK0800852S: 0.423 kg
 GBK0800853S: 0.416 kg

G		VW3L2E001R30	39
GBK0400660E	45	VW3L2F001R30	39
GBK0600570A	45	VW3L2K001R30	39
GBK0600572S	45	VW3L2M001R100	39
GBK0600573S	45	VW3L2M001R150	39
GBK0600660E	45	VW3L2M001R200	39
GBK0800852S	45	VW3L2M001R30	39
GBK0800853S	45	VW3L2M001R50	39
GBX040●●●K	43	VW3L2M211R100	39
GBX060●●●K	43	VW3L2M211R150	39
GBX080●●●K	43	VW3L2M211R200	39
GBY060●●●K	44	VW3L2M211R30	39
GBY080●●●K	44	VW3L2M211R50	39
I		VW3L2P001R30	39
ILA1●571	13	VW3L2R001R30	39
ILA1●572	13	VW3L2T001R30	39
ILA2●571	23	VW3L2U001R100	39
ILA2●572	23	VW3L2U001R150	39
ILE1●661	15	VW3L2U001R200	39
ILE2●661	25	VW3L2U001R30	39
ILE2●662	25	VW3L2U001R50	39
ILS1M571	33	VW3L30001R100	41
ILS1M572	33	VW3L30001R150	41
ILS1M573	33	VW3L30001R200	41
ILS1M851	33	VW3L30001R30	41
ILS1M852	33	VW3L30001R50	41
ILS1M853	33	VW3L30010R100	40
ILS1●571	17, 37	VW3L30010R150	40
ILS1●572	17, 37	VW3L30010R200	40
ILS1●573	17, 37	VW3L30010R30	40
ILS1●851	17, 37	VW3L30010R50	40
ILS1●852	17, 37	VW3L40020	40
ILS1●853	17, 37	VW3L40210	40
ILS2●571	27	VW3L40300	40
ILS2●572	27	VW3L40420	40
ILS2●573	27	VW3L50010	40, 41
ILS2●851	27	VW3L50200	40, 41
ILS2●852	27	VW3L50300	40, 41
ILS2●853	27	VW3L5B000	41
V		VW3L5D000	41
VW3L10000N10	38	VW3L5E000	41
VW3L10000N20	38	VW3L5F000	38, 41
VW3L10000N50	38	VW3L5K000	41
VW3L10100N10	38	VW3L5P000	41
VW3L10100N2	38	VW3L5T000	41
VW3L10111	38		
VW3L10222	38		
VW3L1B001N01	40		
VW3L1D001N01	40		
VW3L1E001N01	40		
VW3L1F001N01	40		
VW3L1R000	38		
VW3L1R000R30	38		
VW3L1R001N01	40		
VW3L1T000R30	38		
VW3L1T001N01	40		
VW3L20010R100	39		
VW3L20010R150	39		
VW3L20010R200	39		
VW3L20010R30	39		
VW3L20010R50	39		
VW3L2B001R30	39		
VW3L2D001R30	39		



Schneider Electric USA

Motion Competency Center
1300 S. Wolf Road
Des Plaines, IL 60018-1300 USA
Tel: 847-789-5424

USA Customer Care Center
Tel: 888-778-2733

Schneider Electric Canada

5985 McLaughlin Rd.
Mississauga, Ontario, Canada L5R 1B8
Canada Customer Care Center
Tel: 800-565-6699

www.schneider-electric.com

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