Motion control
Lexium SD2, SD3

Catalogue

March 2012

Schneider Electric

All technical information about products listed in this catalogue are now available on:

www.schneider-electric.com

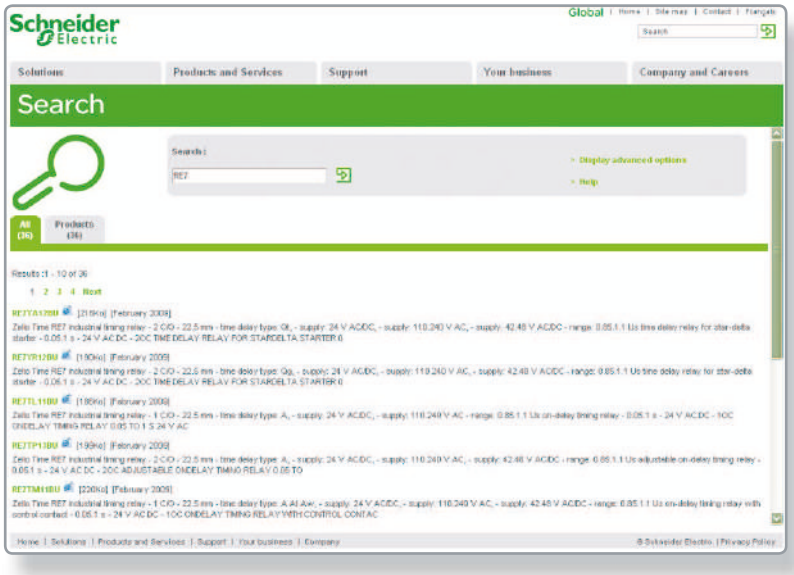
Browse the “product data sheet” to check out :

- characteristics,
- dimensions,
- curves, ...
- and also the links to the user guides and the CAD files.

1 From the home page, type the model number* into the “Search” box.

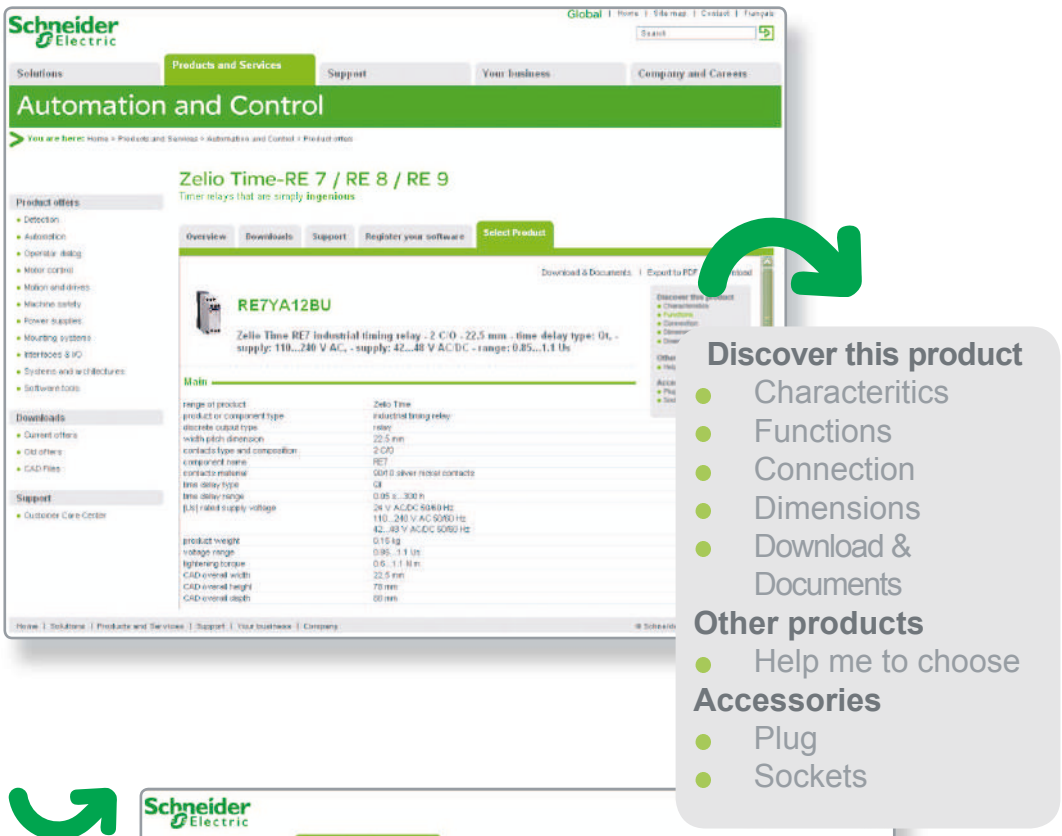
* type the model number without any blank, replace “●” by “*”

2 Under ”All” tab, click the model number that interests you.

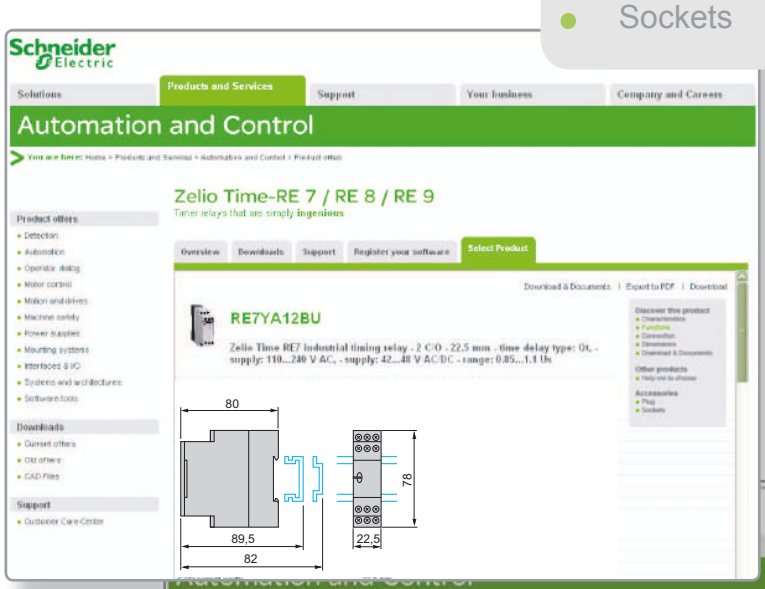


3 The product data sheet displays.

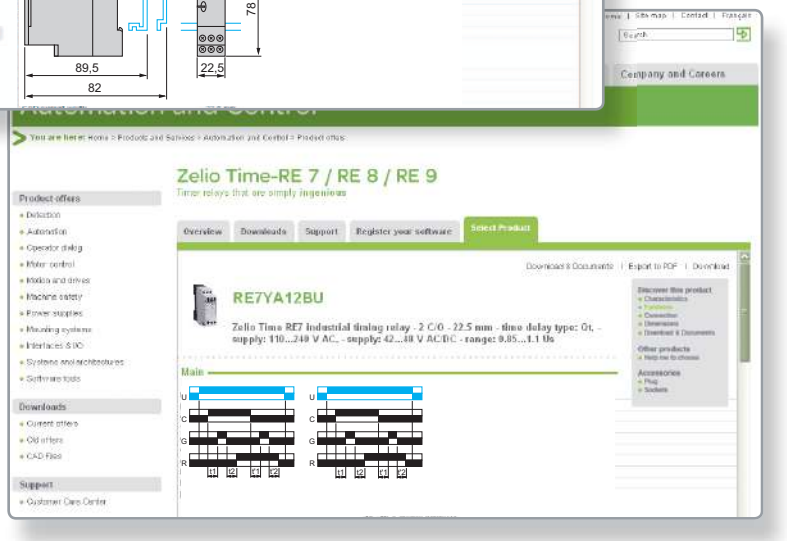
Example : Zelio Time data sheet



Example : Zelio Time data sheet



Example : Zelio Time data sheet



☑ You can get this information in one single pdf file.

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Lexium motion control

Type of application			**Main axes of the machine or high power applications** **Printing, handling, conveying, transfer machines, packaging, textiles, etc**	**Auxiliary axes of the machine or …** **Medical equipment, printed circuit board assembly, spinning, labelling, etc**
Type of solution			**Drive and motor combination (drive mounted in the enclosure)**	

BMH servo motor

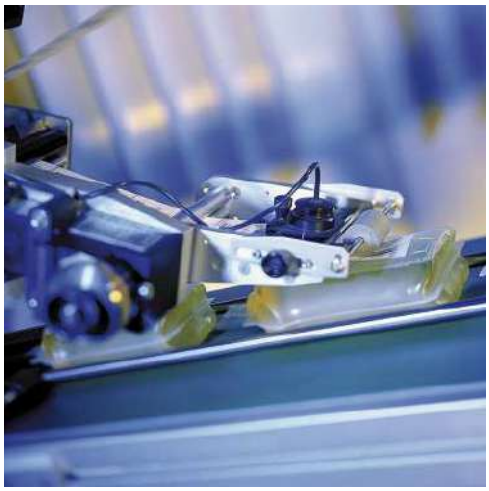
BSH servo motor

BRS2 motor

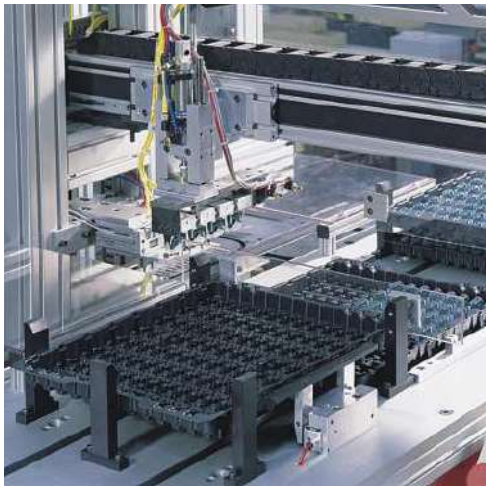
Specificities			High dynamic process with accurate positioning	Short distance movements with accurate positioning
Type of technology			Servo drive with sensor feedback (position control)	2-phase stepper drive and stepper motor
Main characteristics			Compact, high-performance motor control, open communication, top-notch motors	Compact, ready-to-use solution,constant speed, high holding torque at standstill
Dynamic			★★★★★	★★★
Precision and stability			★★★★	★★★★
Energy saving			★★★★★	★★
Motor inertia			Low (BMH) or Medium (BSH)	Medium
Control Interface	Control signals		Pulse train Input/output	Pulse/direction Input/output
	Bus and networks		Modbus, CANopen	CANopen, RS 485 serial link
	Motion bus		CANmotion	
Communication software			SoMove setup software	Lexium CT software
Drive/motor combinations	Nominal power		150…6500 W	0…120 W
	Nominal speed		1200…6000 min^{-1}	0…1000 min^{-1}
	Nominal torque		0.45…52.2 Nm	0.07…9.2 Nm
Drive characteristics	Safety function		“Safe Torque Off” (STO) function	–
	Line supply voltage		~ 100…120 V single-phase ~ 200…240 V single-phase ~ 208…480 V three-phase	⎓ 24…48 V
	Control power	Input voltage	24 V	
		Input current	1.5 to 10 A	⩽ 1 A
Motor characteristics			BMH	BSH / BRS2
	Type of sensor (resolution given for use with a drive/motor combination)		Single turn SinCos encoder (32,768 or 131,072 increments/ turn) Multiturn SinCos encoder (32,768 or 131,072 increments/ turns x 4096 turns)	Single turn SinCos encoder (131,072 increments/ turn) Multiturn SinCos encoder (131,072 increments/ turns x 4096 turns) / –
	Step angle		–	1.8 °
	Motor flange size (mm)		70, 100, 140, 190, 205	55, 70, 100 and 140 / 36, 42, 57 and 85
Reference			**LXM 32 servo drives and B●H servo motors**	**SD2 drives and BRS2 motors**
Page			Catalogue “Motion control Lexium 32”	6 and 20

	… low power applications					
	Printing, handling, material working, packaging, textiles, etc	**Printing, handling, labelling, packaging, material working, etc**				
		Integrated drive for a minimum size of the enclosure				
	 *BRS3 motor*					
	Short distance movements with accurate positioning	Dynamic process and accurate positioning	Automatic format adjustement	Short distance movements with accurate positioning	Integrated programmable motion controller	For simple applications with accurate positioning
	3-phase stepper drives and stepper motor	Integrated drive with servo motor	Integrated drive with dc brushless motor	Integrated drive with 3-phase stepper motor	Integrated drive with 2-phase stepper motor	
	Compact, easy to tune, high torque even at low speed	Compact, integrated holding brake in option	High holding torque without power, integrated gearbox in option	High torque at low speed, high resolution positioning	Compact, high continuous stall torque, speed stability	
	★★★	★★★★	★★	★★★		
	★★★★	★★★★	★★	★★★★		
	★★	★★★★★	★★★★	★★		
	Medium					
	Pulse/direction Input/ouput	Input/output		Pulse/direction Input/ouput		Pulse/direction (ILT●V) Input/output
	CANopen, PROFIBUS DP, Modbus serial link	CANopen, PROFIBUS DP, RS 485 serial link, DeviceNet, EtherCAT, Modbus TCP, Ethernet Powerlink			RS 485 serial link	CANopen (ILT●A)
	CANopen/CANmotion	–				
	Lexium CT software (SD328)	Lexium CT software				
	350…750 W	150…370 W	100…350 W		150…305 W	
	0…1000 min^{-1}	500…9000 min^{-1}	1500…7000 min^{-1}	0…1000 min^{-1}	0…2000 min^{-1}	
	1.5…16.5 Nm	0.26…0.78 Nm	0.18…0.5 Nm	0.45…6 Nm	0.11…5.87 Nm	
	“Safe Torque Off ” (STO) function				–	
	∼ 100…120 V or ∼ 200…240 V single- phase	IL●1: ⎓ 24…36 V IL●2: ⎓ 24…48 V			⎓ 24…48 V ∼ 95…264 V single-phase	
	24 V	Common with the line supply voltage				
	⩽ 1 A	Common with the line supply voltage				
	BRS3	Integrated				
	Optional encoder with 1000 increments/turn	Single turn SinCos encoder (16,384 increments/turn) Multiturn SinCos encoder (16,384 increments/turn x 4096 turns)	Absolute value encoder (12…1380 increments/ turn)	Index pulse monitoring		Index pulse monitoring (ILT●A)
	1.8/0.9/0.72/0.63/0.18/ 0.09/0.072/ 0.036 °	–		1.8/0.9/0.72/0.63/0.18/0. 09/0.072/ 0.036 °	0.007 ° (theoretical)	
	57, 85 and 110	57	66	57 and 85	36, 42, 57 and 85	
	SD3 drives and BRS3 motors	**ILA integrated drives**	**ILE integrated drives**	**ILS integrated drives**	**ILP integrated drives**	**ILT integrated drives**
	22 and 42	Catalogue “Lexium integrated drives”				

Lexium SD2 motion control
Stepper motor drives



Labelling application



Pick and place application

Electronic card assembly

Presentation

The Lexium SD2 offer comprises a range of SD2 stepper motor drives and a range of BRS2 2-phase stepper motors.
It allows you to select the most suitable combination for your application requirements.

Reference values are defined and can be controlled by a master PLC or a motion controller such as the Lexium LMC.

Power and simplicity boost performance

When combined with BRS2 stepper motors, SD2 drives present a highly compact, high-performance system specially designed for installations comprising simple machines.

Compact range

The compact dimensions of the SD2 stepper motor drive mean that it requires very little space in the control cabinet, making it very easy to integrate.

Simple to install and commission

The Lexium CT PC commissioning software, the ease of parameter-setting and simple wiring all combine to ensure quick and easy commissioning of the Lexium SD2 range.

Flexibility

SD2 stepper motor drives are available in two power classes - 3 A and 5 A.

They are equipped as standard with several communication interfaces:
- RS 485 serial link interface
- CANopen machine bus interface
- Pulse/direction (P/D) interface

This open communication concept enables integration into numerous different control system architectures.

Compliance with international standards and certifications

The SD2 range of stepper motor drives has been developed in accordance with the stringent international standards and recommendations governing electrical industrial control equipment, including IEC/EN 61000-4 (immunity to conducted disturbance induced by high frequency signals) and IEC/EN 50178 (vibration resistance).

Compliance with electromagnetic compatibility requirements has been incorporated in the design of the Lexium SD2 offer. The entire range conforms to international standard IEC/EN 61000-3:2006, environment 2.

SD2 drives carry the CE mark in accordance with the European machinery directive (98/37/EEC) and the European EMC directive (2004/108/EEC).

Applications

The high torque and low rotation speeds of the Lexium SD2 drive make it particularly suitable for short range positioning applications, such as labelling.

Its high holding torque at standstill also significantly reduces implementation costs in pick and place applications.

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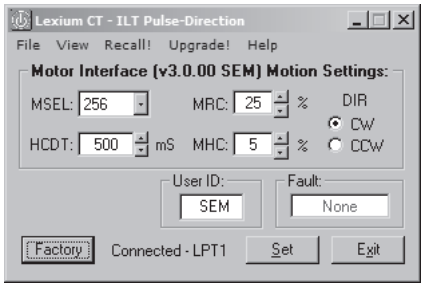

Commissioning using Lexium CT software

Lexium CT commissioning software for PC (optional) - for rapid commissioning and easy configuration

The commissioning time for Lexium SD2 drives is considerably reduced using Lexium CT (Lexium Commissioning Tool) PC software.
It is used for commissioning, parameter setting diagnostics.

It can also be used to install Lexium SD2 drives in existing installations, keeping down time to a minimum.

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

Required configuration

Lexium CT software runs on a PC with the Microsoft Windows® 2000/XP/Vista operating systems. The drive is commissioned via the RS 485 serial link interface.

Download

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

BRS2 2-phase stepper motor/SD2 drive combinations

Motor type	Lexium SD2 drive 24…48 V ⎓ supply voltage	
	Output current: 3 A	Output current: 5 A
	SD21••U20C	SD21••U50C
	Holding torque	Holding torque
	Nm	Nm
BRS236	0.07	
BRS242	0.23…0.53	
BRS257	0.64…1.69	0.64…1.69
BRS285		2.96…9.20

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Lexium SD2 motion control
SD218P stepper motor drives
With RS 485 serial link

SD218PU20C drive with RS 485 serial link

SD218PU50C drive with RS 485 serial link

Presentation

Lexium SD218P stepper motor drives are equipped with an RS 485 serial link interface and an integrated programmable motion controller.

The RS 485 serial link interface is used for configuring and controlling Lexium SD218P drives.
The drives are configured with Lexium CT PC commissioning software which can be used for point-to-point or multipoint configuration.

The integrated programmable controller means that, when combined with Schneider Electric BRS2 stepper motors, SD218P drives present a highly compact, powerful standalone drive system.

This solution offers a high level of performance, yet reduces installation, commissioning and wiring costs for a wide variety of applications.

Among their many features, the drives offer high-precision positioning (0.01° to 1.8°) as well as optimum motor efficiency due to resonance-free operation. They are also particularly suitable for numerous applications when combined with the BRS2 range of stepper motors (0.07 to 9.2 Nm torque).

Two SD218P drive models are available, one with a 3 A current output (SD218PU20C) and one with a 5 A current output (SD218PU50C).

The connections differ depending on the model:
- **SD218PU20C** drives are equipped with:
  - Three connectors:
    - One for the power supply and multifunction interface 1
    - One for the RS 485 serial link 2
    - One for the motor 3

- **SD218PU50C** drives are equipped with:
  - Four connectors:
    - One for the power supply interface 4
    - One for the multifunction interface 5
    - One for the RS 485 serial link 6
    - One for the motor 7

Supply voltage
Lexium SD218P drives can be powered by a 24 V to 48 V DC supply.

Applications

Application examples for SD218P drives:
- Small labelling machines
- Medical and laboratory machines
- Electronic card assembly machines
- Spinning machines
- Etc.

Lexium SD2 motion control
SD218P stepper motor drives
With RS 485 serial link

Interfaces

Lexium SD218P drives can be configured and controlled using Lexium CT PC commissioning software via the RS 485 serial link interface.

The drives also have:
- A multifunction interface
- A power supply interface
- A motor connection interface

An RS 485 serial link interface

The RS 485 serial link interface is used for commissioning, configuring and maintaining Lexium SD218P drives.

It can be used to connect a PC to a Lexium SD218P drive via an RS 485/USB converter (see page 10).
Lexium CT PC software can then be used via this direct link to access the Lexium SD218P drive's commissioning, configuration and programming functions.

Multifunction interface

The multifunction interface supports the following signals:
- Eight 5 to 24 V signals, configurable as logic inputs or outputs
- One analog signal, configurable as voltage or current
- One 0 to 5 V signal, configurable as a capture input or a trip output
- Two 0 to 5 V pulse/direction (P/D) signals, configurable as inputs or outputs

5 to 24 V logic I/O

The multifunction interface supports eight 5 to 24 V signals, configurable as positive logic (Sink) or negative logic (Source) inputs or outputs.

The I/O can be used for the following predefined functions:
- Input functions: Homing, + limit, - limit, go, stop, pause, JOG+, JOG-, universal function
- Output functions: motion, error, stalling, change of speed, universal function

Analog input

The analog input can be configured as a voltage input (0 to 5 V or 0 to 10 V ⎓) or an X-Y mA current input (by programming X and Y from 4 to 20 mA or 0 to 20 mA).

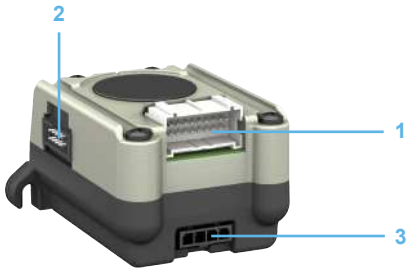
0 to 5 V capture input/trip output

The high speed signal is used to capture the position of the axis or to control an external event when it is set as a trip output.

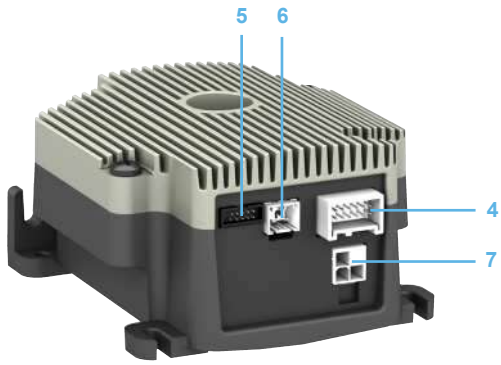
0 to 5 V pulse/direction (P/D) I/O

The pulse/direction (P/D) signals can be used to control a third-party device. When configured as input signals, they can receive pulse/direction signals from a master controller, such as a Schneider Lexium Controller.

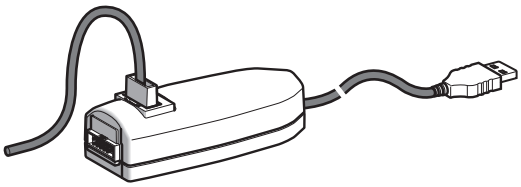
Lexium SD2 motion control
SD218P stepper motor drives
With RS 485 serial link



SD218PU20C drive



SD218PU50C drive


RS 485/USB converter for SD218P drive

Connection accessories

Specific accessories are available for connecting the various interfaces depending on the drive model:

SD218PU20C drive

Connectors

Description	Used for	Item no.	Order in lots of	Unit reference	Weight kg
Connectors	Power supply and multifunction interface	1	5	**VW3 L5 C10N05**	0.010
	RS 485 serial link	2	5	**VW3 L5 C02N05**	0.010
	Motor connection	3	5	**VW3 L5 C06N05**	0.010

Cordsets

Description	Used for	Cable length	Reference	Weight
		m		kg
Cordsets with connector at one end and flying leads at the other	Power supply and multifunction interface	3	**VW3 L3 P02R30**	0.181
	RS 485 serial link	3	**VW3 L3 D02R30**	0.181
	Motor connection	3	**VW3 L3 M02R30**	0.221

SD218PU50C drive

Connectors

Description	Used for	Item no.	Order in lots of	Unit reference	Weight kg
Connectors	Multifunction interface	4	5	**VW3 L5 C09N05**	0.010
	RS 485 serial link	5	5	**VW3 L5 C02N05**	0.010
	Power supply	6	5	**VW3 L5 C05N05**	0.010
	Motor connection	7	5	**VW3 L5 C07N05**	0.010

Cordsets

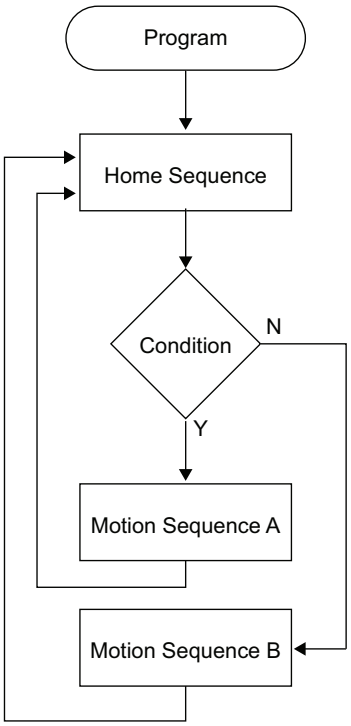
Description	Used for	Cable length	Reference	Weight
		m		kg
Cordsets with connector at one end and flying leads at the other	Multifunction interface	3	**VW3 L3 D05R30**	0.351
	RS 485 serial link	3	**VW3 L3 D02R30**	0.181
	Power supply	3	**VW3 L3 P03R30**	0.161
	Motor connection	3	**VW3 L3 M01R30**	0.371

Installation accessory

RS 485/USB converter for SD218P drive

Description	Cable length	Reference	Weight
	m		kg
Converter equipped with: ■ 1 RS 485 connector ■ 1 USB connector	3	**VW3 L1 R402**	0.191

Lexium SD2 motion control
SD218P stepper motor drives
With RS 485 serial link



Programming example for SD218P drive

SD218PU50C drive

Main functions

General

All SD218P drive functions can be configured via the RS 485 serial link interface, by connecting a terminal or using Lexium CT PC commissioning software.

Parameters can be saved to the drive's internal non-volatile memory. No other options, such as limit switches, are required.

Operating modes

SD218P drives have two operating modes.
- Manual mode (JOG)

In this mode, the commands and parameters are transmitted to the drive via the Lexium CT PC software.
- Programmable mode

This mode is used to save programs in the drive's integrated motion controller.

Motion functions

- Setting the number of steps (from 200 to 51200)
- Velocity profile
- Point-to-point mode
- Homing
- Electronic gearing mode (for the version with industrial connectors)

Other functions

- Setting the motor phase current (from 1 to 100% of nominal current)
- Configuring the I/O signals
- Program functions (calling a subroutine, creation of user variables, etc.)
- Mathematical functions (addition, subtraction, multiplication, division, AND, OR, XOR, NOT functions, etc.)
- Trip functions
- Encoder functions

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

References

Example:	**S**	**D**	**2**	**1**	**8**	**P**	**U**	**2**	**0**	**C**
Drive **SD2** = 2-phase stepper motor drive	**S**	**D**	**2**	1	8	P	U	2	0	C
Drive type **18** = standard	S	D	2	**1**	**8**	P	U	2	0	C
Interface **P** = RS 485 serial link interface, programmable	S	D	2	1	8	**P**	U	2	0	C
Peak output current (rms) **U20** = 3 A **U50** = 5 A	S	D	2	1	8	P	**U**	**2**	**0**	C
Supply voltage **C** = 48 V ⎓	S	D	2	1	8	P	U	2	0	**C**

Dimensions (overall)

Drive	**W x H x D** **mm**
SD218PU20C	45 x 37 x 59
SD218PU50C	88 x 54 x 99

Lexium SD2 motion control
SD218A stepper motor drives
For CANopen machine bus

SD218AU20C drive for CANopen machine bus

SD218AU50C drive

Presentation

Lexium SD218A stepper motor drives are equipped with a CANopen machine bus interface and an integrated programmable motion controller.

The CANopen machine bus interface is used for configuring and controlling Lexium SD218A drives.
The drives are configured with Lexium CT PC commissioning software which can be used for point-to-point or multipoint configuration.

The integrated programmable controller means that, when combined with Schneider Electric BRS2 stepper motors, SD218A drives present a highly compact, rugged standalone drive system.

This solution offers a high level of performance, yet reduces installation, commissioning and wiring costs for a wide variety of applications.

Among their many features, the drives offer high-precision positioning (0.01° to 1.8°) as well as optimum motor efficiency due to resonance-free operation. They are also particularly suitable for numerous applications when combined with the BRS2 range of stepper motors (0.07 to 9.2 Nm torque).

Two SD218A drive models are available, one with a 3 A current output (SD218AU20C) and one with a 5 A current output (SD218AU50C).

The connections differ depending on the model:
- **SD218AU20C** drives are equipped with:
- Two PCB connectors:
  - One for the power supply and multifunction interface 1
  - One for the motor 2
- One 9-way male SUB-D connector for the CANopen machine bus 3

- **SD218AU50C** drives are equipped with:
- Three PCB connectors:
  - One for the power supply interface 4
  - One for the multifunction interface 5
  - One for the motor 6
- One 9-way male SUB-D connector for the CANopen machine bus 7

Supply voltage
Lexium SD218A drives can be powered by a 24 V to 48 V DC supply.

Applications

Application examples for SD218A drives:
- Small labelling machines
- Medical and laboratory machines
- Electronic card assembly machines
- Spinning machines
- Etc.

Interfaces

Lexium SD218A drives can be configured and controlled using Lexium CT PC commissioning software via the CANopen machine bus interface (CiA DS301 and DSP402 “Device profile for Drives and Motion Control”).

The drives also have:
- A multifunction interface
- A power supply interface
- A motor connection interface

CANopen machine bus interface

The CANopen machine bus interface is used for commissioning, configuring and maintaining Lexium SD218A drives.

It can be used to connect a PC to a Lexium SD218A drive via an CANopen/USB converter (see page 14).
Lexium CT PC software can then be used via this direct link to access the Lexium SD218A drive's commissioning, configuration and programming functions.

Multifunction interface

The multifunction interface supports the following signals:
- Eight 5 to 24 V signals, configurable as logic inputs or outputs
- One analog signal, configurable as voltage or current
- One 0 to 5 V signal, configurable as a capture input or a trip output
- Two 0 to 5 V pulse/direction (P/D) signals, configurable as inputs or outputs

5 to 24 V logic I/O

The multifunction interface supports eight 5 to 24 V signals, configurable as positive logic (Sink) or negative logic (Source) inputs or outputs.

The I/O can be used for the following predefined functions:
- Input functions: Homing, + limit, - limit, go, stop, pause, JOG+, JOG-, universal function
- Output functions: motion, error, stalling, change of speed, universal function

Analog input

The analog input can be configured as a voltage input (0 to 5 V or 0 to 10 V ⎓) or an X-Y mA current input (by programming X and Y from 4 to 20 mA or 0 to 20 mA).

0 to 5 V capture input/trip output

The high speed signal is used to capture the position of the axis or to control an external event when it is set as a trip output.

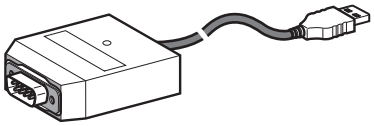
0 to 5 V pulse/direction (P/D) I/O

The pulse/direction (P/D) signals can be used to control a third-party device.
When configured as input signals, they can receive pulse/direction signals from a master controller, such as a Schneider Lexium Controller.

Lexium SD2 motion control
SD218A stepper motor drives
For CANopen machine bus

SD218AU20C drive

SD218AU50C drive



CANopen/USB converter for SD218A drive

Connection accessories

Specific accessories are available for connecting the various interfaces depending on the drive model:

SD218AU20C drive

Connectors

Description	Used for	Item no.	Order in lots of	Unit reference	Weight kg
Connectors	Power supply and multifunction interface	1	5	**VW3 L5 C10N05**	0.010
	Motor connection	2	5	**VW3 L5 C06N05**	0.010

Cordsets

Description	Used for	Cable length	Reference	Weight
		m		kg
Cordsets with connector at one end and flying leads at the other	Power supply and multifunction interface	3	**VW3 L3 P02R30**	0.181
	Motor connection	3	**VW3 L3 M02R30**	0.221

SD218AU50C drive

Connectors

Description	Used for	Item no.	Order in lots of	Unit reference	Weight kg
Connectors	Power supply	3	5	**VW3 L5 C05N05**	0.010
	Multifunction interface	4	5	**VW3 L5 C09N05**	0.010
	Motor connection	5	5	**VW3 L5 C07N05**	0.010

Cordsets

Description	Used for	Cable length	Reference	Weight kg
		m		
Cordsets with connector at one end and flying leads at the other	Power supply	3	**VW3 L3 P03R30**	0.161
	Multifunction interface	3	**VW3 L3 D05R30**	0.351
	Motor connection	3	**VW3 L3 M01R30**	0.371

Installation accessory

CANopen/USB converter for SD218A drive

Description	Cable length	Reference	Weight
	m		kg
Converter equipped with: ■ One 9-way male SUB-D connector (converter connection cable not included) ■ 1 USB connector	3.6	**VW3 L1 R500**	0.136

Lexium SD2 motion control
SD218A stepper motor drives
For CANopen machine bus

SD218AU50C drive

Main functions

General

All SD218A drive functions can be configured via the CANopen machine bus interface, by connecting a terminal or using Lexium CT PC commissioning software.

Parameters can be saved to the drive's internal non-volatile memory. No other options, such as limit switches, are required.

Operating modes

The following operating modes can be set:
- Point-to-point mode (movement can be absolute or relative)
- Homing (forced or with search for reference sensor)
- Velocity profile

Other functions

- Setting the motion profile via the profile generator
- Configuring the I/O signals
- Triggering the Quick Stop function
- Fast position capture

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

References

Example:	**S**	**D**	**2**	**1**	**8**	**A**	**U**	**2**	**0**	**C**
Drive **SD2** = 2-phase stepper motor drive	**S**	**D**	**2**	1	8	A	U	2	0	C
Drive type **18** = standard	S	D	2	**1**	**8**	A	U	2	0	C
Interface **A** = CANopen machine bus	S	D	2	1	8	**A**	U	2	0	C
Peak output current (rms) **U20** = 3 A **U50** = 5 A	S	D	2	1	8	A	**U**	**2**	**0**	C
Supply voltage **C** = 48 V ⎓	S	D	2	1	8	A	U	2	0	**C**

Dimensions (overall)

Drive	**W x H x D** **mm**
SD218AU20C	45 x 37 x 59
SD218AU50C	88 x 54 x 99

Lexium SD2 motion control
SD215D stepper motor drives
With pulse/direction (P/D) interface

SD215DU20C drive with pulse/direction interface

SD215DU50C drive with pulse/direction interface

Presentation

Lexium SD215D stepper motor drives are equipped with control electronics with pulse/direction (P/D) interface. The pulse/direction (P/D) signals from a master controller, for example a Lexium LMC, are converted directly into a movement.

Lexium SD215D drives can be configured and controlled using Lexium CT PC commissioning software via the SPI serial link interface.

When combined with Schneider Electric BRS2 stepper motors, SD215D drives present a highly compact drive system and offer a high level of performance, while reducing installation, commissioning and wiring costs for a wide variety of applications.

Among their many features, these drives offer high-precision positioning (0.036° to 1.8°) as well as optimum motor efficiency due to resonance-free operation. They are particularly suitable for numerous applications when combined with the BRS2 range of stepper motors (0.07 to 9.2 Nm torque).

Two SD215D drive models are available, one with a 3 A current output (SD215DU20C) and one with a 5 A current output (SD215DU50C).

The connections differ depending on the model:

- **SD215DU20C** drives are equipped with:
  - Two connectors:
    - One for the power supply, logic input interface and SPI serial link interface 1
    - One for the motor 2

- **SD215DU50C** drives are equipped with:
  - Three connectors:
    - One for the logic input interface and SPI serial link interface 3
    - One for the power supply interface 4
    - One for the motor 5

Supply voltage

Lexium SD215D drives can be powered by a 24 V to 48 V DC supply.

Applications

Application examples for SD215D drives:

- Small labelling machines
- Medical and laboratory machines
- Electronic card assembly machines
- Spinning machines
- Etc.

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SD218A drives: page 12
BRS2 stepper motors: page 20

Lexium SD2 motion control
SD215D stepper motor drives
With pulse/direction (P/D) interface

Interfaces

Lexium SD215D drives can be configured and controlled via the SPI serial link interface.

The drives also have:
- A logic input interface
- A power supply interface
- A motor connection interface

SPI serial link interface

The SPI serial link interface is used for commissioning, configuring and maintaining Lexium SD215D drives.

It can be used to connect a PC to a Lexium SD215D drive via an SPI//USB converter (see page 18).
Lexium CT PC software can then be used via this direct link to access the Lexium SD215D drive's commissioning, configuration and programming functions.

This interface can be used, for example, to configure the following functions:
- Setting the motor phase current
- Setting the number of steps
- Configuring the pulse train
- Configuring the input signals
- Etc.

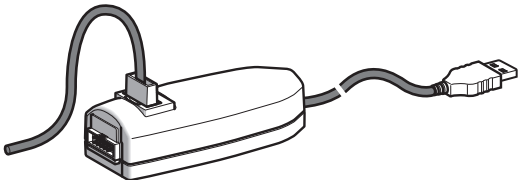
5 to 24 V logic input interface

The interface supports 5 to 24 V positive logic (Sink) or negative logic (Source) input signals, separated by optical coupler:
- The reference values are transmitted via two pulse/direction (P/D) signals
- The other input signals have the following functions:
  - “Activation/locking of the power stage” (ENABLE) and “activation/locking of the indexing pulse” (GATE)
  - Configuration of the input as positive (Sink) or negative (Source) logic

Lexium SD2 motion control
SD215D stepper motor drives
With pulse/direction (P/D) interface

SD215DU20C drive

SD215DU50C drive



SPI/USB converter for SD215D drive

Connection accessories

Specific accessories are available for connecting the various interfaces depending on the drive model:

SD215DU20C drive

Connectors

Description	Used for	Item no.	Order in lots of	Unit reference	Weight kg
Connectors	Power supply, logic input interface and SPI serial link interface	1	5	**VW3 L5 C03N05**	0.010
	Motor connection	2	5	**VW3 L5 C06N05**	0.010

Cordsets

Description	Used for	Cable length	Reference	Weight
		m		kg
Cordsets with connector at one end and flying leads at the other	Power supply, logic input interface and SPI serial link interface	3	**VW3 L3 D03R30**	0.331
	Motor connection	3	**VW3 L3 M02R30**	0.221

SD215DU50C drive

Connectors

Description	Used for	Item no.	Order in lots of	Unit reference	Weight kg
Connectors	Logic input and SPI serial link interface	3	5	**VW3 L5 C03N05**	0.010
	Power supply	4	5	**VW3 L5 C05N05**	0.010
	Motor connection	5	5	**VW3 L5 C07N05**	0.010

Cordsets

Description	Used for	Cable length	Reference	Weight
		m		kg
Cordsets with connector at one end and flying leads at the other	Logic input and SPI serial link interface	3	**VW3 L3 D03R30**	0.331
	Power supply	3	**VW3 L3 P03R30**	0.161
	Motor connection	3	**VW3 L3 M01R30**	0.371

Installation accessory

SPI/USB converter for SD215D drive

Description	Cable length	Reference	Weight
	m		kg
Converter equipped with: ■ One connector for SPI link ■ 1 USB connector	3.6	**VW3 L1 V303**	0.421

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Lexium SD2 motion control
SD215D stepper motor drives
With pulse/direction (P/D) interface

Main functions

General

All SD215D drive functions can be configured via the SPI serial link interface, by connecting a terminal or by using Lexium CT PC commissioning software:
- Setting the number of steps (from 200 to 51200)
- Setting the motor phase current (from 1 to 100% of nominal current)
- Reducing the motor phase current (from 0 to 100% of nominal current)
- Input signal functions: Transmission of the reference value via pulse/direction or encoder (A/B) signals
- Adjusting the input filter
- Etc.

Parameters can be saved to the drive's internal non-volatile memory. No other options, such as limit switches, are required.

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

SD215DU50C drive

References

Example:	**S**	**D**	**2**	**1**	**5**	**D**	**U**	**2**	**0**	**C**
Drive **SD2** = 2-phase stepper motor drive	**S**	**D**	**2**	1	5	D	U	2	0	C
Drive type **15** = standard	S	D	2	**1**	**5**	D	U	2	0	C
Interface **D** = pulse/direction (P/D)	S	D	2	1	5	**D**	U	2	0	C
Peak output current (rms) **U20** = 3 A **U50** = 5 A	S	D	2	1	5	D	**U**	**2**	**0**	C
Supply voltage **C** = 48 V ⎓	S	D	2	1	5	D	U	2	0	**C**

Dimensions (overall)

Drive	**W x H x D** **mm**
SD215DU20C	45 x 33 x 59
SD215DU50C	88 x 54 x 99

Lexium SD2 motion control
BRS2 2-phase stepper motors

Lexium SD2 drive and BRS2 stepper motor combinations

Presentation

BRS2 motors are 2-phase stepper motors. Their robust design ensures that only minimum maintenance is required.

They carry out precise step-by-step movements that are predefined by a stepper motor drive such as a Lexium SD2 drive.
Maximum power is obtained when the motor and electronics are perfectly tuned to each other.
When used with the appropriate drive, 2-phase stepper motors can be operated at very high resolutions.

Management of motor disturbance

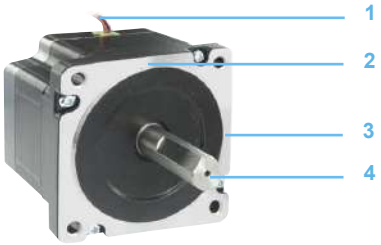
The sinusoidal commutation and special mechanical design of BRS2 2-phase stepper motors mean that they are very quiet and run with virtually no resonance.

Optimized power

The optimized internal geometry of BRS2 stepper motors means they are more powerful than conventional stepper motors.

Flexibility

The modularity of the offer makes it possible to provide a quick solution to meet the specific needs of each application.



Description

1 Motor connection: version with flying leads
2 Housing, with black protective coating
3 Axial flange with four mounting points conforming to the NEMA 13 standard
4 Smooth shaft end

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SD3 drives: page 22
SD3 motors: page 42

BRS2 motor offer

2-phase stepper motors			BRS236	BRS242	BRS257	BRS285
						
Flange size	–	**mm**	36	42	57	85
Holding torque	M_H	**Nm**	0.07	0.23 ... 0.53	0.64 ... 1.69	2.96 ... 9.20
Number of steps	z	–	200			
Step angle	α	°	1.8			
Phase current	–	**A rms**	0.75	1.5	2.4 ... 3	6.3
Degree of protection	–	–	IP 20 according to standard IEC/EN 60034-5			
Ambient air temperature	–	**°C**	- 25 ... + 40			
Winding insulation class	–	–	B (maximum temperature for windings 130°C) according to standard IEC/EN 60034-1			

References

BRS2361A070 stepper motor

Example:	**B**	**R**	**S**	**2**	**3**	**6**	**1**	**A**	**0**	**7**	**0**
Motor type **S** = stepper motor	B	R	**S**	2	3	6	1	A	0	7	0
Number of motor phases **2** = 2-phases	B	R	S	**2**	3	6	1	A	0	7	0
Flange size **36** = 36 mm **42** = 42 mm **57** = 57 mm **85** = 85 mm	B	R	S	2	**3**	**6**	1	A	0	7	0
Number of motor stages **1** = one stage (all flange sizes) **2** = two stages (not available for 36 mm flange) **3** = three stages (not available for 36 mm flange)	B	R	S	2	3	6	**1**	A	0	7	0
Number of shafts **A** = 1 shaft end	B	R	S	2	3	6	1	**A**	0	7	0
Phase current **07** = 0.75 A rms (BRS236) **15** = 1.5 A rms (BRS242) **24** = 2.4 A rms (BRS257) **30** = 3 A rms (BRS257) **60** = 6 A rms (BRS285)	B	R	S	2	3	6	1	A	**0**	**7**	0
Encoder **0** = no encoder											**0**

Dimensions (overall in mm)

Motor type	BRS236	BRS242			BRS257			BRS285		
	1A070	1A150	2A150	3A150	1A●●0	2A●●0	3A●●0	1A600	2A600	3A600
W x H	35.3 x 35.3	42.3 x 42.3			56.4 x 56.4			86 x 86		
D	26	34	40	48	45	54	76	60	80	120

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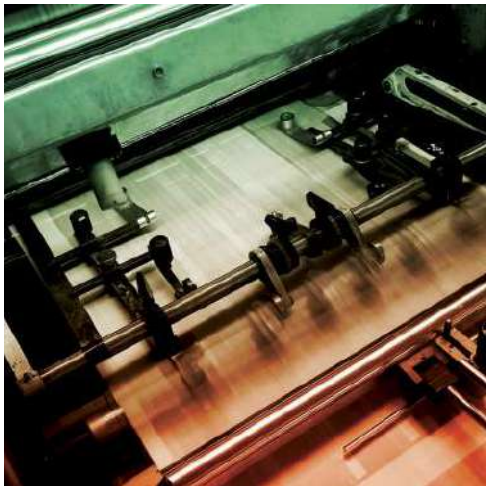
Lexium SD3 motion control
Stepper motor drives



Lexium SD3 drive controlling a printing machine

Lexium SD3 drive controlling textile machines

Presentation

The Lexium SD3 offer consists of an SD3 stepper motor drive and a BRS3 3-phase stepper motor.

This combination provides an extremely compact and high performance drive system, designed more specifically for complex machines.

Reference values are defined by a master PLC or a motion controller such as the Lexium LMC. If necessary, the encoder data is fed back from the drive to the PLC or to the master motion controller.

Compact offer

With its compact size, the SD3 stepper motor drive takes up very little space in the control cabinet and is easily integrated into the installation.

Easy to install and commission

The simple wiring of SD315 and SD326 drives means they can be installed quickly. Commissioning is instantaneous, no software is required.

The SD328 drive is easy to configure from the integrated graphic display terminal, via the communication bus, or using Lexium CT PC commissioning software, with its customizable menus.

Flexibility

SD3 stepper motor drives are available in three power classes - 2.5 A, 6.8 A and 10 A.

They are designed to offer open communication to various control system architectures by means of their communication interfaces or integrated communication protocols.

Depending on the model, they incorporate an EMC filter to enhance installation protection, reduce costs and provide an economical means of ensuring that machines meet CE marking requirements. They comply with standard IEC/EN 61800-3, second edition, categories C2 and C3.

Compliance with international standards and certifications

Lexium stepper motor drives have been designed in accordance with the stringent international standards and recommendations governing electrical industrial control equipment (IEC, EN), including low voltage control devices, IEC/EN 61800-5-1, IEC/EN 50178 and IEC/EN 61800-3 (immunity to conducted disturbance induced by high frequency signals).

They bear the CE mark in accordance with the European machinery directive (98/37/EEC) and the European EMC directive (2004/108/EEC).

The entire range is c UL us certified (United States and Canada).
SD328 drives are also TÜV certified in accordance with the safety standards for medical devices and equipment.

Applications

The Lexium SD3 stepper motor drive range is designed to meet the requirements of applications needing excellent synchronisation characteristics, such as scanning or isolation.

With its high torque at low rotation speeds, the BRS3 stepper motor is particularly suitable for short range positioning applications.

Its high holding torque at standstill also significantly reduces implementation costs in pick and place applications.

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BRS3 3-phase stepper motor/SD3 drive combinations

Motor type	Lexium SD3 drives		
	24…48 V ⎓ supply voltage	115…230 V ∼ supply voltage	
	10 A rms output current	2.5 A rms output current	6.8 A rms output current
		With EMC filter	With EMC filter and fan






	SD315	SD326●U25	SD328●U25	SD326●U68	SD328●U68
	Nm *(1)*	Nm *(1)*	Nm *(1)*	Nm *(1)*	Nm *(1)*
BRS364H	0.51 / 0.45				
BRS366H	1.02 / 0.90				
BRS368H	1.70 / 1.50				
BRS397H	2.26 / 2.0				
BRS39AH	4.8 / 4.0				
BRS39BH	5.5 / 5.75				
BRS368		1.7 / 1.5			
BRS397		2.3 / 2.0			
BRS39A		4.5 / 4.0			
BRS39B		6.8 / 6.0			
BRS3AC				13.5 / 12.0	
BRS3AD				19.7 / 16.5	

(1) The first value corresponds to the holding torque at standstill M_H. The second value corresponds to the nominal torque M_N.

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Lexium SD3 motion control
SD315 stepper motor drives
With pulse/direction (P/D) interface

SD315 stepper motor drive

Presentation

The Lexium SD315 drive is a drive for 3-phase stepper motors equipped with control electronics with a pulse/direction (P/D) interface.

The reference values are defined and controlled by a master PLC or a motion controller such as Schneider Electric's Lexium LMC.
They are transmitted in increments by a pulse train via the pulse/direction interface. Each pulse corresponds to one motor step.

Commissioning is immediate, without the need for software.

The BRS36 and BRS39 range of 3-phase stepper motors (torque from 0.45 to 6 Nm) combined with SD315 drives provides an extremely compact and high performance drive system for a wide variety of applications.

Lexium SD315 drives have been designed in compliance with standard IEC/EN 61800-3, category 2 to conform to electromagnetic compatibility requirements.

Supply voltage
Lexium SD315 drives can be powered by a 24 V to 48 V DC supply.

Applications

- Folding or finishing machines
- Small numerical control machines
- Sewing machines, embroidery machines

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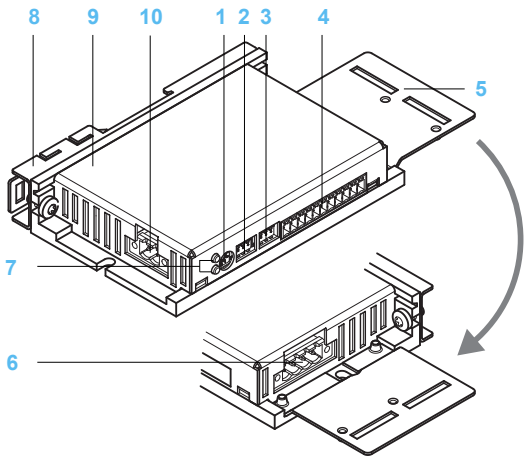
Lexium SD3 motion control

SD315 stepper motor drives

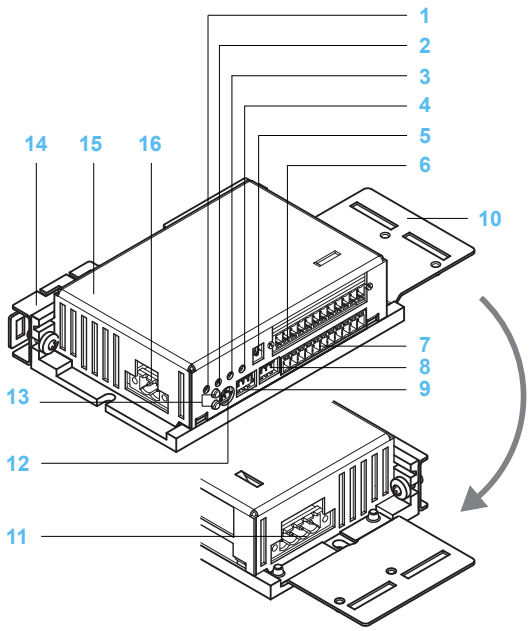
With pulse/direction (P/D) interface



Description

Two SD315 drive models are available :
- SD315D drive with pulse/direction interface without oscillator interface
- SD315O drive with pulse/direction interface with oscillator interface

SD315D drives have:
1 Rotary switch for setting the motor phase current
2 Parameter switch for setting the “Motor phase current reduction” function and the “Softstep” function
3 Parameter switch for setting the number of steps and the “ENABLE/GATE” function
4 Input signal interface
5 EMC mounting plate (accessory, see page 27)
6 Motor connection terminals
7 Two status LEDs (one green and one red)
8 DIN rail mounting plate (accessory, see page 27)
9 Nameplate with simplified manual
10 Power terminals



SD315O drives have:
1 Potentiometer (maximum frequency limit)
2 Potentiometer (minimum frequency limit)
3 Acc (acceleration) ramp time potentiometer
4 Dec (deceleration) ramp time potentiometer
5 Switch for selecting the source of the analog signal in “Oscillator” mode
6 Interface for “Oscillator” operating mode
7 Interface for 5 or 24 V ⎓ input signals separated by optocouplers
8 Parameter switch for setting the “Motor phase current reduction” function and the “Softstep” function
9 Parameter switch for setting the number of steps and the “ENABLE/GATE” function
10 EMC mounting plate (accessory, see page 27)
11 Motor connection terminals
12 Rotary switch for setting the motor phase current
13 Two status LEDs (one green and one red)
14 DIN rail mounting plate (accessory, see page 27)
15 Nameplate with simplified manual
16 Power terminals

Lexium SD3 motion control
SD315 stepper motor drives
With pulse/direction (P/D) interface

Main functions

The following functions can be set via the SD315 drive parameter switch.

Adjustment functions

- Setting the motor phase current (from 3 to 10 A)
- Setting the number of steps (from 200 to 10,000)
- Reducing the motor phase current at standstill (from 0 to 100% of nominal current)
- “Softstep” function (allows very quiet motor running, in particular at low speeds or in the event of modification of the predefined reference values)
- Setting the “activation/locking of the power stage” (ENABLE) function and the “activation/locking of the indexing pulse” (GATE) function
- Selecting the analog signal source in “Oscillator” mode (on the SD315O version): integrated or external f_high/f_low potentiometers

Monitoring functions

- Overvoltage or undervoltage detection
- Temperature control
- Detection of a short-circuit between two motor phases

5 V or 24 V input signal functions

- Transmission of the reference value via pulse/direction (P/D) signals
- “Activation/locking of the power stage” (ENABLE)
- “Activation/locking of the indexing pulse” (GATE)
- Direction of motor rotation
- Increase/decrease the number of steps by a factor of 10

Display of status information

- Turned off
- Power stage activated/deactivated
- Overheating of the power part
- Overvoltage or undervoltage
- Pulse frequency too high on the signal interface
- Short-circuit between two motor phases

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

Lexium SD3 motion control

SD315 stepper motor drives

With pulse/direction (P/D) interface

SD315DN10B400 drive

References

Example:	S	D	3	1	5	D	N	1	0	B	4	0	0
Drive **SD3** = 3-phase stepper motor drive	**S**	**D**	**3**	1	5	D	N	1	0	B	4	0	0
Drive type **15** = standard	S	D	3	**1**	**5**	D	N	1	0	B	4	0	0
Interfaces **D** = pulse/direction without "Oscillator" mode **O** = pulse/direction with "Oscillator" mode	S	D	3	1	5	**D**	N	1	0	B	4	0	0
Peak output current (rms) **N10**= 10 A	S	D	3	1	5	D	**N**	**1**	**0**	B	4	0	0
Supply voltage **B4** = 24…48 V ⎓	S	D	3	1	5	D	N	1	0	**B**	**4**	**0**	**0**

Dimensions (overall)

Drive	W x H x D mm
SD315	74.5 x 117 x 23.5

Connection accessories

Designation			Reference	Weight kg
Mounting plate For mounting to DIN rail			**MNA 3MF DINR1**	–
EMC mounting plate (for connection of shielded cables)			**MNA 3CS 013**	–
Connectors				
Spring clam connector kits	For SD315D drive	2, 4 and 11 pins	**MNA 3CS 008**	–
	For SD315O drive	2, 4, 11 and 12 pins	**MNA 3CS 009**	–

Designation	Description	Cable length m	Reference	Weight kg
Cordsets for 3-phase stepper motor				
Cordsets for 3-phase stepper motor	Shielded cable, 4 x 1.5 mm². Equipped with one circular connector (motor end) and a free end	3	**VW3 S5 101 R30**	–
		5	**VW3 S5 101 R50**	–
		10	**VW3 S5 101 R100**	–
		15	**VW3 S5 101 R150**	–
		20	**VW3 S5 101 R200**	–
Cables for 3-phase stepper motor				
Cables for 3-phase stepper motor	Shielded cable, 4 x 1.5 mm². Flying leads (both ends)	3	**VW3 S5 102 R30**	–
		5	**VW3 S5 102 R50**	–
		10	**VW3 S5 102 R100**	–
		15	**VW3 S5 102 R150**	–
		20	**VW3 S5 102 R200**	–

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Lexium SD3 motion control

SD326 stepper motor drives

With pulse/direction (P/D) interface

SD326●U25 stepper motor drive

Presentation

The Lexium SD326 stepper motor drive is a drive for 3-phase stepper motors equipped with control electronics with a pulse/direction (P/D) interface.

Reference values are defined and controlled by a master PLC or a motion controller such as Schneider Electric's Lexium LMC.
They are transmitted in increments by a pulse train via the pulse/direction interface.

Commissioning is immediate, without the need for software.

With the integrated functions, it is possible to modify the stepper resolution and the motor current value, or to enable the power stage. An output signal indicates the “Drive ready” status.

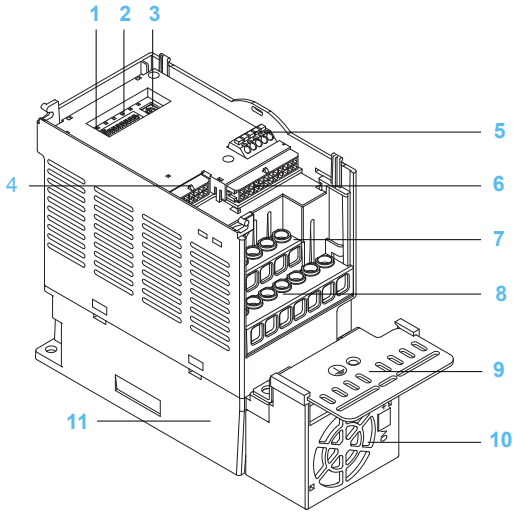
The BRS3 range of stepper motors (torque from 0.07 to 16.5 Nm) combined with SD326 drives provides an extremely compact and high performance drive system for a wide variety of applications.

Supply voltage
Lexium SD326 drives can be powered by a 115 V/230 V AC (switchable) supply.

Version for holding brake and rotation monitoring

SD326 drives are available in several versions.
One of these has a 24 V ⎓ output for a holding brake; this option is offered with BRS3 motors (see page 42).

This output also enables activation of the "Rotation monitoring” function, which is available with BRS3 motors equipped with an encoder (see page 42).



Description

SD326 drives have:
1 Status LED
2 Drive parameter setting switch
3 Rotary switch for setting the motor current
4 Interface for the motor “Rotation monitoring” function (optional 12-way female connector, see accessory page 30)
5 24 V signal interface (spring terminals) for:
- Encoder power supply
- Output for holding brake or encoder fault

6 Pulse/direction interface (optional 24-way female connector, see accessory page 30) for:
- 5 V logic inputs, separated by optocoupler
- 24 V logic inputs, separated by optocoupler
- “Drive ready” output

7 Screw terminals for connecting the line supply
8 Screw terminals for connecting the motor
9 EMC mounting plate (optional, see page 30)
10 Fan (supplied with SD326●U68 drive, in option with SD326●U25 drive, see page 30)
11 Heatsink

Applications

- Printing
- Handling
- Machining
- Packaging
- Etc.

Presentation: page 22 | SD315 drives: page 24 | SD328 drives: page 32 | BRS3 motors: page 42 | SD2 drives: page 6

Lexium SD3 motion control
SD326 stepper motor drives
With pulse/direction (P/D) interface

Main functions

The following functions can be set via the SD326 drive's parameter switch.

Adjustment functions

- Setting the motor phase current (from 0.6 to 6.8 A)
- Setting the number of steps (from 200 to 10,000)
- Reducing the motor phase current at standstill (from 0 to 60% of nominal current)
- “Softstep” function (allows very quiet motor running, in particular at low speeds or in the event of modification of the predefined reference values)

Motor monitoring functions

Using a stepper motor with encoder, a version offered for BRS3 motors (see page 42), provides the following functions:

- Rotation monitoring:
  This function compares the calculated position reference and the actual position of the motor. If a set deviation limit is exceeded, a rotation fault is signalled.
  To use this function a 24 V ⎓ supply must be connected.
- Encoder cable monitoring:
  The encoder cable is monitored by a line monitoring system; if a cable is faulty or missing, the fault is signalled.
- Motor temperature monitoring:
  If the temperature is too high, the drive malfunctions.

Input signal functions

- Transmission of the reference value via pulse/direction (P/D) signals
- “Activation/locking of the power stage” (ENABLE)
- “Activation/locking of the indexing pulse” (GATE)

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

Lexium SD3 motion control
SD326 stepper motor drives
With pulse/direction (P/D) interface

SD326●U68 stepper motor drive

References

Example:	S	D	3	2	6	D	U	2	5	S	2
Drive **SD3** = 3-phase stepper motor drive	**S**	**D**	**3**	2	6	D	U	2	5	S	2
Drive type **26** = standard	S	D	3	**2**	**6**	D	U	2	5	S	2
Interfaces **D** = pulse/direction without rotation monitoring **R** = pulse/direction with rotation monitoring and holding brake	S	D	3	2	6	**D**	U	2	5	S	2
Peak output current (A rms) **U25** = 2.5 A **U68** = 6.8 A	S	D	3	2	6	D	**U**	**2**	**5**	S	2
Supply voltage **S2** = 115 V/230 V ∼ (switchable)	S	D	3	2	6	D	U	2	5	**S**	**2**

Dimensions (overall)

Drive	W x H x D mm
SD326	72 x 145 x 140

Mounting accessory

Description	Application	Reference	Weight kg
Mounting plate	For mounting on 35 mm ⊔ rail	**VW3 A11 851**	–

Connection accessories

Designation	Description	Cable length m	Reference	Weight kg
Cordsets for pulse/direction (P/D) interface				
Cordsets for pulse/direction interface	5 V, shielded cable Equipped with a 24-way Molex connector on the drive side and one stripped end	0.5	**VW3 S8 201R05**	–
		1.5	**VW3 S8 201R15**	–
		3	**VW3 S8 201R30**	–
		5	**VW3 S8 201R50**	–
	24 V, shielded cable Equipped with a 24-way Molex connector on the drive side and one stripped end	0.5	**VW3 S8 202R05**	–
		1.5	**VW3 S8 202R15**	–
		3	**VW3 S8 202R30**	–
		5	**VW3 S8 202R50**	–
Cordsets for connection between pulse/direction interface and Schneider Electric TSX CFY motion control module	Equipped with a 24-way Molex connector on the drive side and a 15-way female SUB-D connector on the PLC side	1.5	**VW3 S8 204R15**	–
		3	**VW3 S8 204R30**	–
Cordsets for connection between pulse/direction interface and Siemens S7-300 FM353 PLC	Equipped with a 24-way Molex connector on the drive side and a 15-way female SUB-D connector on the PLC side	1.5	**VW3 S8 206R15**	–
		3	**VW3 S8 206R30**	–
Cordsets for connection between pulse/direction interface and a Schneider Electric TLM2 motion controller	Equipped with a 24-way Molex connector on the drive side and a 15-way female SUB-D connector on the motion controller side	0.5	**VW3 S8 208R05**	–
		1.5	**VW3 S8 208R15**	–
		3	**VW3 S8 208R30**	–
		5	**VW3 S8 208R50**	–
Connectors				
Connector kits	Comprises 5 24-pole Molex plugs with crimp contacts. For 5V/24 V signal interface	–	**VW3 S8 212**	–
	Comprises 5 12-pole Molex plugs with crimp contacts. For motor rotation monitoring	–	**VW3 M8 213**	–

Fan kit for SD326●U25

Fan kit ⎓ 24 V (supplied with SD326●U68 drive)	–	**VW3 S3 101**	–

Presentation: page 22 | SD315 drives: page 24 | SD328 drives: page 32 | BRS3 motors: page 42 | SD2 drives: page 6

Lexium SD3 motion control

SD326 stepper motor drives

Integrated EMC filters and optional additional input filters

Additional EMC filter VW3 A31 401

Presentation

SD326 drives have integrated radio interference input filters to comply with the EMC standard for adjustable speed electrical power drive systems IEC/EN 61800-3, edition 2, category C3 in environment 2, and to comply with the European EMC (electromagnetic compatibility) directive.

For more stringent requirements, the use of additional input filters is recommended in order to reduce conducted emissions to below the limits of standard IEC/EN 61800-3, edition 2, categories C2 and C3:

Maximum motor cable length conforming to IEC/EN 61800-3		
Category	**Without EMC filter**	**With EMC filter**
C3	10 m	50 m
C2	–	20 m

Note:
- *Category C2 in environment 1 corresponds to use in residential areas and restricted distribution via specialists.*
- *Category C2 in environment 2 corresponds to use in industrial premises.*

The degree of protection of EMC filters is IP 21 after removal of the protective cover (IP 41 on the upper part with protective cover).

The filter can be fitted on the back or the side of the drive.

Use according to the type of network

Use of these built-in or additional filters is only possible on TN (neutral connection) and TT (neutral to earth) type networks.

Standard IEC/EN 61800-3, appendix D2.1, states that on IT (isolated or impedance earthed neutral) type networks, filters can adversely affect the operation of the insulation monitors. In addition, the effectiveness of additional filters on this type of network depends on the type of impedance between neutral and earth, and therefore cannot be predicted.

***Note**: If a machine is to be installed on an IT network, one solution is to insert an isolation transformer in order to re-create a TT network on the secondary side.*

Reference

Single-phase supply voltage: 115 V/230 V ∼ 50/60 Hz

Description	In *(1)*	Reference	Weight kg
Additional EMC filter	9	**VW3 A31 401**	0.600

(1) Nominal filter current

Lexium SD3 motion control
SD328 stepper motor drives
For CANopen/CANmotion, Modbus, PROFIBUS DP

SD328●U25 stepper motor drive

Presentation

Lexium SD328 drives are 3-phase stepper motor drives equipped with control electronics and numerous interfaces for commissioning, programming and maintenance.

Control and command are handled by a master PLC or by a motion controller such as the Lexium LMC.

Reference values are transmitted via:
- The CANopen communication bus, Modbus serial link (SD328A drive) or PROFIBUS DP fieldbus (SD328B drive)
  The CANopen interface on the SD328A drive can be used to connect a CANopen machine bus or a CANopen/CANmotion machine bus; a motion controller, such as a Lexium LMC, can synchronize up to 8 drive axes via the CANopen/CANmotion machine bus.
- ±10 V analog signals for “Oscillator” operating mode (SD328A drive).
- Pulse/direction or A/B encoder signals for “Electronic gearing” mode.

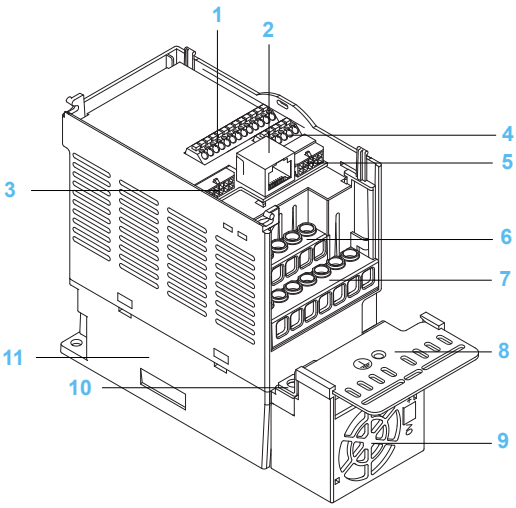
Numerous integrated functions can be used to meet the needs of most motion control applications.

The BRS3 range of stepper motors (torque from 0.07 to 19.7 Nm) combined with SD328 drives provides an extremely compact and high performance drive system for a wide variety of applications.

Supply voltage
Lexium SD328 drives can be powered by a 1115 V/230 V AC (switchable) supply.

Version with holding brake

SD328 drives are available in several versions.
One of these has a 24 V ⎓ output for a holding brake; this option is offered with BRS3 motors (see page 42).



Description

SD328 drives have:
1 Spring terminals for:
- ±10 V analog reference input in “Oscillator” mode (for SD328A drive)
- Connection to the CANopen/CANmotion machine bus (for SD328A drive)
- Connection to the PROFIBUS DP fieldbus (for SD328B drive)
- 8 logic I/O assigned according to the selected operating mode

2 Female RJ45 connector for connection to:
- The Modbus serial link or CANopen machine bus (for SD328A drive)
- A PC with Lexium CT commissioning software installed
- The remote display terminal

3 12-way female connector for motor encoder (option, see page 34)
4 Connection terminals for the 24 V power supply and holding brake
5 10-way female connector for pulse/direction (P/D) or A/B encoder signals in “Electronic gearing” mode (option, see page 34)
6 Screw terminals for connecting the line supply
7 Screw terminals for connecting the motor and external braking resistors
8 EMC mounting plate (option, see page 34)
9 Fan (supplied with SD328●U68 drive, in option with SD328●U25 drive, see page 34)
10 Bracket for EMC mounting plate
11 Heatsink

Applications

- Printing
- Materials handling
- Machining
- Packaging
- Etc.

Presentation: page 22 | SD315 drives: page 24 | SD326 drives: page 28 | BRS3 motors: page 42 | SD2 drives: page 6

Lexium SD3 motion control
SD328 stepper motor drives
For CANopen/CANmotion, Modbus, PROFIBUS DP

Main functions

Commissioning functions

Commissioning can be performed:
- Locally, using the following tools:
  - Integrated graphic display terminal
  - Remote display terminal
  - Lexium CT PC commissioning software

In local mode, motion is controlled by an analog signal (± 10 V) or by RS 422 signals (pulse/direction signals).
Limit switches or reference sensors cannot be connected.
- Via a communication bus: All communication is then controlled by the bus.

Operating modes

The operating modes available for the SD328 drive depend on the type of control selected.

Operating mode	For SD3		Control		Transmission of reference value
	28A	28B	Via the communication bus	Local	
Manual mode (JOG)	■	■	■	■	Communication bus, Lexium CT PC commissioning software, integrated graphic display terminal
Oscillator mode	■	□	■	■	Communication bus, Lexium CT PC commissioning software, ±10 V analog signals
Electronic gearing mode	■	■	■	■	Pulse/direction signals (P/D), A/B encoder signals
Point-to-point mode	■	■	■	□	Communication bus, Lexium CT PC commissioning software
Velocity profile mode	■	■	■	□	Communication bus, Lexium CT PC commissioning software
Homing mode	■	■	■	□	Communication bus, Lexium CT PC commissioning software
Motion sequence mode	■	■	■	■	Communication bus, Lexium CT PC commissioning software

■ Functions available

□ Functions not available

Safe Torque Off (Power Removal) safety function

SD328 drives feature the integrated “Safe Torque Off” function which prevents unintended restarting of the motor. The motor no longer produces any torque when this safety function is activated.
It enables a category 0 stop (Safe Torque Off “STO”) or a category 1 stop (Safe Stop 1 “SS1”) to be performed in accordance with standard IEC/EN 60204-1 without external power protection devices. It complies with the product standard IEC/EN 61800-5-2 for both stop functions.

The drive does not have to be turned off, which helps reduce system costs and restart times.

The integrated Safe Torque Off function also conforms to the requirements of standard IEC/EN 61508 level SIL2, ISO 13849-1 performance level “d” (PL d).

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

Lexium SD3 motion control

SD328 stepper motor drives

For CANopen/CANmotion, Modbus, PROFIBUS DP

SD328●U68 stepper motor drive

References

Example:	S	D	3	2	8	A	U	2	5	S	2
Drive **SD3** = 3-phase stepper motor drive	**S**	**D**	**3**	2	8	A	U	2	5	S	2
Drive type **28** = standard	S	D	3	**2**	**8**	A	U	2	5	S	2
Interfaces **A** = CANopen machine bus, Modbus serial link and analog input **B** = PROFIBUS DP fieldbus	S	D	3	2	8	**A**	U	2	5	S	2
Peak output current (rms) **U25** = 2.5 A **U68** = 6.8 A	S	D	3	2	8	A	**U**	**2**	**5**	S	2
Supply voltage **S2** =115 V/230 V ∼ (switchable)	S	D	3	2	8	A	U	2	5	**S**	**2**

Dimensions (overall)

Drive	W x H x D mm
SD328	72 x 145 x 140

Mounting accessory

Designation	Application	Reference	Weight kg
Mounting plate	For mounting on 35 mm ⊔ rail	**VW3 A11 851**	–

Connection accessories

Designation	Description	Reference	Weight kg
Connector kits	Comprises 5 12-pole Molex plugs; with crimp contacts. For motor rotation monitoring	**VW3 M8 213**	–
	Comprises 5 10-pole Molex plugs; with crimp contacts For pulse/direction or A/B encoder interface	**VW3 M8 212**	–

Fan kit

Designation	Reference	Weight kg
Fan kit ⎓ 24 V	**VW3 S3 101**	–

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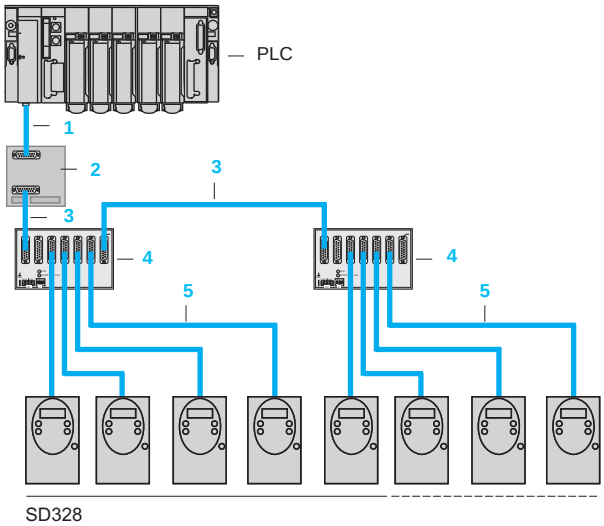
Connection accessories for pulse/direction (P/D) interface

SD328 stepper motor drives are designed to transmit reference values via pulse/direction (P/D) or encoder A/B signals powered by an external supply. These signals are distributed via the SD328 drive's pulse/direction signal interface, used in “Electronic gearing” mode.



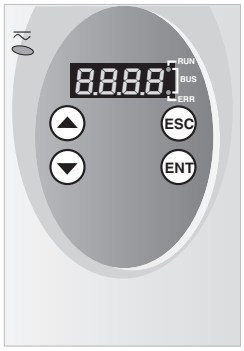
Designation	Description	Item no.	Cable length	Reference	Weight
			m		kg
Splitter box for encoder or pulse/direction signals (RVA) See page 38	For distributing A/B encoder signals or pulse/direction signals to 5 drives. Includes one 24 V ⎓ power supply unit for 5 V ⎓ encoder power supply. Mounted on rail.	4	–	**VW3 M3 101**	–
Cordset for connecting two VW3 M3 101 splitter boxes or one VW3 M3 101 splitter box and one VW3 M3 102 RS 422 converter	For cascading two splitter boxes. Equipped with two 15-way female SUB-D connectors.	3	0.5	**VW3 M8 211R05**	–
Cordsets for connection between VW3 M3 101 splitter box and SD328 drive	Equipped with a 10-way Molex connector on the drive side and a 15-way female SUB-D connector.	5	0.5	**VW3 M8 209R05**	–
			1.5	**VW3 M8 209R15**	–
			3	**VW3 M8 209R30**	–
			5	**VW3 M8 209R50**	–
RS 422 converter (USIC: Universal Signal Interface Converter) See page 38	For converting 24 V control signals to the RS 422 standard	2	–	**VW3 M3 102**	–
Cordsets for connection between PLC and RS 422 converter See page 38	Equipped with a 15-way female SUB-D connector and one stripped end. Shielded cable.	1	0.5	**VW3 M8 210R05**	–
			1.5	**VW3 M8 210R15**	–
			3	**VW3 M8 210R30**	–
			5	**VW3 M8 210R50**	–
Cordsets for pulse/direction, ESIM or A/B encoder signal interface	Equipped with a 10-way Molex connector on the drive side and one stripped end.	–	0.5	**VW3 M8 201R05**	–
			1.5	**VW3 M8 201R15**	–
			3	**VW3 M8 201R30**	–
			5	**VW3 M8 201R50**	–
Cordsets for connection between pulse/direction interface and Schneider Electric TSX CFY motion control module	Equipped with a 10-way Molex connector on the drive side and a 15-way female SUB-D connector on the PLC side.	–	0.5	**VW3 M8 204R05**	–
			1.5	**VW3 M8 204R15**	–
			3	**VW3 M8 204R30**	–
			5	**VW3 M8 204R50**	–
Cordset for connection between pulse/direction interface and Siemens S5 IP247 PLC	Equipped with a 10-way Molex connector on the drive side and a 9-way female SUB-D connector on the PLC side.	–	3	**VW3 M8 205R30**	–
Cordset for connection between pulse/direction interface and Siemens S5 IP267 PLC	Equipped with a 10-way Molex connector on the drive side and a 9-way female SUB-D connector on the PLC side.	–	3	**VW3 M8 206R30**	–
Cordset for connection between pulse/direction interface and Siemens S7-300 FM353 PLC	Equipped with a 10-way Molex connector on the drive side and a 15-way female SUB-D connector on the PLC side.	–	3	**VW3 M8 207R30**	–

Lexium SD3 motion control

SD328 stepper motor drives

Dialogue: integrated display terminal and optional remote display terminal

The SD328 stepper motor drive can be controlled in local mode using:
- The integrated display terminal
- The remote display terminal
- Lexium CT PC commissioning software



Integrated display terminal

Integrated display terminal

The 4-digit display shows the drive states, faults and parameter values of the SD328 drive. The navigation buttons are used to navigate through the menus, modify values and enter the main settings.

The integrated display terminal also provides the following features:
- Initial settings:
  - Motor selection
  - Communication bus address and transmission speed
  - Logic I/O types (for SD328A drive)
- Drive settings:
  - Speed reduction ratios
  - Phase current for stopping, acceleration and continuous movement
- Drive configuration:
  - Motor encoder configuration
  - Signal selection on the position interface
  - Direction of rotation
  - Time delay for holding brake release and engage
- Manual mode (JOG)
- Error display
- Display of status information:
  - Digital I/O status
  - Actual rotation speed and actual position of the motor
  - DC bus power supply
  - Drive and motor temperature
  - Error and fault log
  - Operating hours counter

Remote terminal (optional)

The SD328 stepper drive motor can be connected to a remote terminal. This terminal can be mounted on an enclosure door with IP 65 degree of protection.
The remote terminal has a graphic display screen and provides access to the same functions as the integrated display terminal.

Description

The remote terminal has the following on its front panel:
1 4-digit graphic display for:
- Displaying numerical values and codes
- Saving values
- Indicating drive faults (display flashes)

2 ESC
- Aborts a value, menu or parameter
- Restores the last saved value

3 Red LED on: DC bus ON

4 ENT:
- Opens a menu or displays a parameter
- Saves the displayed value

5 Quick Stop:
Stop: software stop
Continue: fault reset

6 RUN: local control of motor start

7 Inactive key

8 Down arrow:
- Go to next menu or parameter
- Decrease the displayed value

9 Up arrow:
- Go to previous menu or parameter
- Increase the displayed value

Reference

Designation	Description	Reference	Weight kg
Remote display terminal	Supplied with a cordset equipped with 2 connectors, a seal and screws	**VW3 A31 101**	–

Lexium SD3 motion control

SD328 stepper motor drives

Dialogue: Lexium CT PC commissioning software (optional)

Lexium CT PC commissioning software

Presentation

Description

Lexium CT PC commissioning software is used for commissioning, parameter setting and diagnostics of SD328 stepper motor drives.

In addition to the functions of the integrated display terminal, it provides the following functionality:

- Graphic interfaces for parameter setting and status display
- Diagnostic tools for optimization and maintenance
- Long-term recording for analysis of behaviour during operation
- Input and output signal testing
- On-screen display of signal traces
- Archiving of settings and backups (with export functions for data processing)

Required configuration

A terminal or a laptop PC with serial interface, with Microsoft Windows® 2000/XP/ Vista operating system.

Download

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

Connection accessory

Designation	Description	Cable length	Reference	Weight
		m		kg
PC serial port connection kit	Cordset with an RJ45 connector on the drive side and an RS 232/ RS 485 converter equipped with a 9-way female SUB-D connector on the PC side	3	**VW3 A8 106**	–

Lexium SD3 motion control
SD328 stepper motor drives
Accessories: RS 422 converter (USIC) and signal splitter box (RVA)

RS 422 converter (USIC)

The RS 422 converter (USIC) is used to connect the pulse/direction (P/D) interface to a master, such as a PLC.

Use of the converter is recommended in the following cases:
- To enable communication between 24 V signals and 5 V signals
- When electrical isolation of the signals is necessary (for example, in an environment with high levels of disturbance)
- When signals have to be connected to an open collector at a distance of more than 3 m or when the frequency exceeds 50 kHz

It has the following characteristics:
- 24 V or 5 V ⎓ input signals (separated by optocoupler)
- Control signals conforming to the RS 422 standard
- Electrical isolation of the signals

***Note**: A 24 V ⎓ PELV supply is required.*

Designation	Description	Cable length	Reference	Weight
		m		kg
Reference				
RS 422 converter (USIC)	To convert 24 V ⎓ signals to the RS 422 standard	–	**VW3 M3 102**	–
Connection accessories				
Pulse/direction cordsets for connecting a PLC to an RS 422 converter	Equipped with a 15-way female SUB-D connector on the converter side and one stripped end. Shielded cable.	0.5	**VW3 M8 210R05**	–
		1.5	**VW3 M8 210R15**	–
		3	**VW3 M8 210R30**	–
		5	**VW3 M8 10R50**	–

Signal splitter box (RVA)

This splitter box is for distributing A/B encoder signals or pulse/direction (P/D) signals from the master to one or more SD328 drives.
A maximum of five drives can be connected to it.
The master can be an external encoder (A/B signals) or ESIM (Encoder SIMulation) output signals.

The splitter box also powers the encoder with a 5 V supply, via the “Sense” cables.

It operates on a 24 V ⎓ supply. Power ON is indicated by an LED (5VSE).

Designation	Description	Cable length	Reference	Weight
		m		kg
Reference				
Signal splitter box (RVA)	For distributing A/B encoder signals or pulse/direction signals to 5 drives. Includes one 24 V ⎓ power supply unit for 5 V ⎓ encoder power supply. Mounted on rail.	–	**VW3 M3 101**	–
Connection accessory				
Cordset for splitter box	For cascading two splitter boxes. Equipped with two 15-way female SUB-D connectors.	0.5	**VW3 M8 211R05**	–

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Lexium SD3 motion control
SD328 stepper motor drives
Integrated EMC filters and optional additional input filters

Presentation

Additional EMC filter VW3 A31 401

SD328 drives have integrated radio interference input filters to comply with the EMC standard for adjustable speed electrical power drive systems IEC/EN 61800-3, edition 2, category C3 in environment 2, and to comply with the European EMC (electromagnetic compatibility) directive.

For more stringent requirements, the use of additional input filters is recommended in order to reduce conducted emissions to below the limits of standard IEC/EN 61800-3, edition 2, categories C2 and C3:

Maximum motor cable length conforming to IEC/EN 61800-3		
Category	**Without EMC filter**	**With EMC filter**
C3	10 m	50 m
C2	–	20 m

Note:
- *Category C2 in environment 1 corresponds to use in residential areas and restricted distribution via specialists.*
- *Category C3 in environment 2 corresponds to use in industrial premises.*

The degree of protection of EMC filters is IP 21 after removal of the protective cover (IP 41 on the upper part with protective cover).

The filter can be fitted on the back or the side of the drive.

Use according to the type of network

Use of these built-in or additional filters is only possible on TN (neutral connection) and TT (neutral to earth) type networks.

Standard IEC/EN 61800-3, appendix D2.1, states that on IT (isolated or impedance earthed neutral) type networks, filters can adversely affect the operation of the insulation monitors. In addition, the effectiveness of additional filters on this type of network depends on the type of impedance between neutral and earth, and therefore cannot be predicted.

***Note**: If a machine is to be installed on an IT network, one solution is to insert an isolation transformer in order to re-create a TT network on the secondary side.*

Reference

Single-phase supply voltage: 115 V/230 V ∼ 50/60 Hz

Description	In *(1)*	Reference	Weight kg
Additional EMC filter	9	**VW3 A31 401**	0.600

(1) Nominal filter current

Lexium SD3 motion control

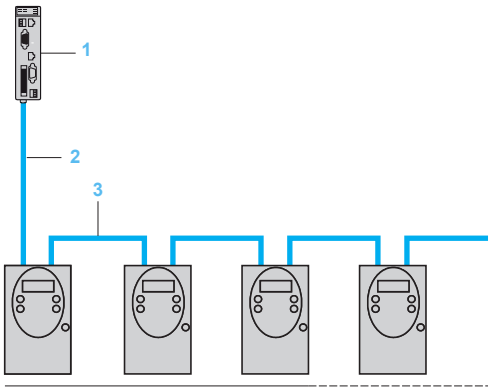
SD328 stepper motor drives

Communication buses and networks: CANopen machine bus for SD328A drive

Presentation

SD328A stepper motor drives can be connected directly to a CANopen machine bus via two interfaces (CN1 or CN4).
On the CN1 interface, three spring terminals are available. The CN4 interface is an RJ45 connector.
Each subscriber to the CANopen machine bus must be configured before using the network. The transmission speed must be the same for all subscribers. The address and transmission speed are set during commissioning.
The machine bus must be fitted with a line terminator at each end. This terminator is activated by means of switch S1.

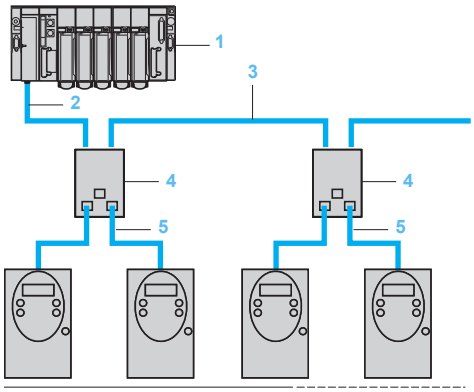
When combined with a Lexium Motion Controller, the CANmotion bus can be used for axis synchronisation in applications that require control of up to 8 axes.



SD328A

Example of connection to the CANopen/CANmotion bus

1 Motion controller such as the Lexium LMC
2 CANopen cordset VW3 M3 805R010
3 CANopen cable TSX CAN ●●



SD328A

Example of connection to the CANopen machine bus by means of a tap junction

1 PLC, such as the Premium, or Twido programmable controller
2 TSX CAN●● cable with SUB-D connector TSX CAN KCDF90T
3 TSX CAN●● cable
4 CANopen tap VW3 CAN TAP2
5 CANopen cordset VW3 CAN CARR●●

Accessories for connection to the CANopen/CANmotion machine bus

Designation	Description	Cable length	Reference	Weight
		m		kg
CANopen cordsets	Equipped with an RJ45 connector at each end	0.3	**VW3 CAN CARR03**	0.050
		1	**VW3 CAN CARR1**	0.500
	Equipped with a 9-way female SUB-D connector with integrated line terminator and 1 RJ45 connector	1	**VW3 M3 805R010**	–
IP 20 CANopen cables	Standard cable, CE marking, low smoke, zero halogen, flame retardant (IEC 60332-1)	50	**TSX CAN CA50**	4.930
		100	**TSX CAN CA100**	8.800
		300	**TSX CAN CA300**	24.560
	UL certification, CE marking, flame retardant (IEC 60332-1)	50	**TSX CAN CB50**	3.580
		100	**TSX CAN CB100**	7.840
		300	**TSX CAN CB300**	21.870
	For harsh environments *(1)* or mobile installation, CE marking, low smoke, zero halogen, flame retardant (IEC 60332-1)	50	**TSX CAN CD50**	3.510
		100	**TSX CAN CD100**	7.770
		300	**TSX CAN CD300**	21.700
IP 20 CANopen tap	With 2 RJ45 ports for trunk cable tap-off	–	**VW3 CAN TAP2**	–
Daisy chain tap	With 3 RJ45 connectors and 1 x 0.3 m cable	0.3	**TCS CTN 023F13M03**	–
IP 20 CANopen connector (Twido programmable controller side)	9-way female, right angle, SUB-D connector. Switch for line terminator.	–	**TSX CAN KCDF90T**	–

(1) Harsh environments:
- Resistance to hydrocarbons, industrial oils, detergents, solder splashes
- Relative humidity up to 100%
- Saline atmosphere
- Significant temperature variations
- Operating temperature between -10°C and +70°C

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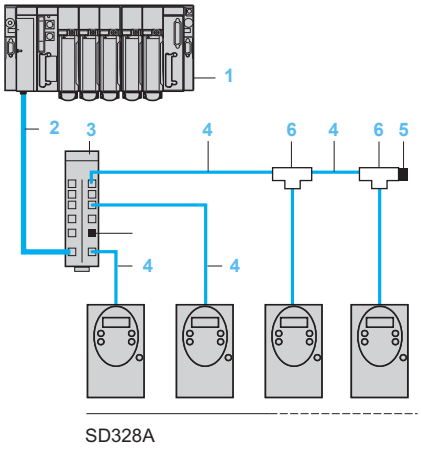
Lexium SD3 motion control

SD328 stepper motor drives

Communication buses and networks: Modbus serial link for SD328A drive

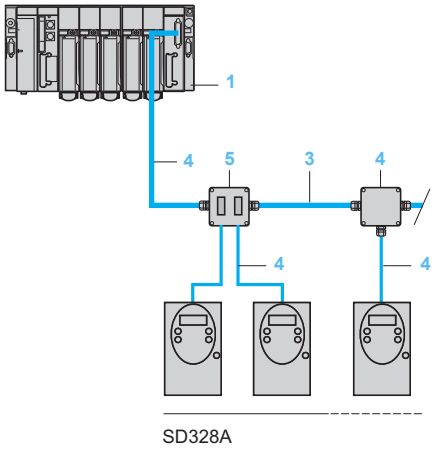
Presentation

SD328A stepper motor drives can be connected directly to the Modbus serial link via the CN4 interface.
Each device then receives an address.
The transmission speed must be the same for all drives connected to the Modbus serial link.



Example of connection with splitter box and RJ45 connectors (1)

1 PLC
2 Modbus cable, depending on the type of control unit or PLC
3 Modbus splitter box LU9 GC3
4 Modbus serial link cable VW3 A8 306R●●
5 RC line terminator VW3 A8 306RC
6 Modbus T-junction box VW3 A8 306TF●●



Example of connection with junction box and subscriber socket (1)

1 PLC
2 Modbus cable, depending on the type of control unit or PLC
3 Modbus serial link cable TSX CSA ●●●
4 Modbus junction box TSX SCA 50
5 Subscriber socket TSX SCA 62
6 Modbus serial link cable VW3 A8 306
7 Modbus serial link cable VW3 A8 306D30

(1) Connection via screw terminals:
Use a Modbus serial link cable VW3 A8 306D30 and an RC line terminator VW3 A8 306DRC.

Accessories for Modbus serial link connection

Designation	Description		Cable length	Reference	Weight
			m		kg
Junction box for Modbus serial link	3 screw terminals and one RC line terminator, to be connected using cable VW3 A8 306D30		–	**TSX SCA 50**	0.520
Subscriber socket	Two 15-way female SUB-D connectors, 2 screw terminals and an RC line terminator. To be connected using cable VW3 A8 306		–	**TSX SCA 62**	0.570
Modbus splitter box	10 RJ45 connectors and 1 screw terminal		–	**LU9 GC3**	0.500
Line terminators	For RJ45 connector	R = 120 Ω, C = 1 nF	–	**VW3 A8 306RC**	0.010
		R = 150 Ω	–	**VW3 A8 306R**	0.010
	For screw terminals	R = 120 Ω, C = 1 nF	–	**VW3 A8 306DRC**	0.200
		R = 150 Ω	–	**VW3 A8 306DR**	0.200
Modbus RJ45 T-junction boxes	With integrated cable		0.3	**VW3 A8 306TF03**	–
			1	**VW3 A8 306TF10**	–
Cordsets for Modbus serial link	Equipped with one RJ45 connector and one stripped end. For Modbus junction box TSX SCA 50		3	**VW3 A8 306D30**	0.150
	Equipped with an RJ45 connector and a 15-way SUB-D connector. For subscriber socket TSX SCA 62		3	**VW3 A8 306**	0.150
	Equipped with 2 RJ45 connectors		0.3	**VW3 A8 306R03**	0.025
			1	**VW3 A8 306R10**	0.060
			3	**VW3 A8 306R30**	0.130
Cables for Modbus serial link	Double shielded twisted pair for RS 485 serial link, without connector		100	**TSX CSA 100**	5.680
			200	**TSX CSA 200**	10.920
			500	**TSX CSA 500**	30.000

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Lexium SD3 motion control
BRS3 3-phase stepper motors

Lexium SD3 drive and BRS3 stepper motor combinations

Presentation

BRS3 motors are 3-phase stepper motors. Their robust design ensures that only minimum maintenance is required.
They carry out precise step-by-step movements that are predefined by a stepper motor drive.
Maximum power is obtained when the motor and electronics are perfectly tuned to each other.
When used with the appropriate drive, 3-phase stepper motors can be operated at very high resolutions.

Management of motor disturbance

The sinusoidal commutation and special mechanical design of BRS3 3-phase stepper motors mean that they are very quiet and run with virtually no resonance.

Optimized power

The optimized internal geometry of BRS3 stepper motors means they are more powerful than conventional stepper motors.

Flexibility

The modularity of the offer makes it possible to provide a quick solution to meet the specific needs of each application.

Options

Options, such as the holding brake or encoder, as well as rugged planetary gearboxes without mechanical backlash, increase the performance of the system.

Holding brake

BRS3 motors offer a version that allows the addition of a holding brake (see references pages 44 to 47).

The holding brake is an electromagnetic pressure spring brake which locks the motor shaft when the motor current is cut (for example, in the event of a fault or an Emergency Stop), thereby significantly increasing safety.
Locking of the motor shaft is also necessary in cases of torque overload, for example during vertical movement.

The connector (Hirschmann G4 A 5M) is supplied.

***Note**: The holding brake option cannot be used if the motor is equipped with a second shaft end.*

Encoder

BRS3 3-phase stepper motors can be equipped with an encoder (see references pages 44 to 47).

If the stepper motor drive is equipped with an electronic rotation monitoring system, the encoder can be used as a system for measuring the actual position of the rotor.

Using the encoder makes it possible to compare the calculated position reference with the actual position of the motor. If a following deviation limit is exceeded, a rotation fault is signalled, for example in the event of “mechanical stiffness”.

The use of an encoder also provides the added benefit of temperature measurement via an integrated sensor.

***Note:** Motors with encoder are equipped with an additional connector.*
The encoder option is not compatible with the second shaft end option.

Planetary gearboxes

To complete the BRS3 motor range, Schneider Electric offers planetary gearboxes which can be used to adapt rotation speeds and torques while ensuring high precision.
See page 48.

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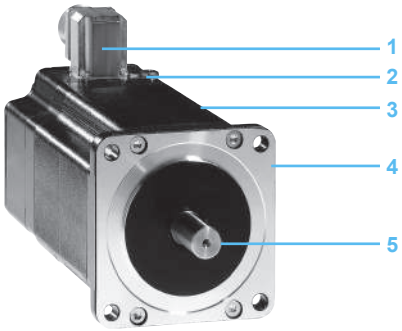
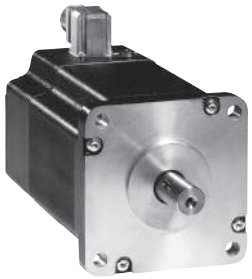
Lexium SD3 motion control
BRS3 3-phase stepper motors



Description

BRS3 motors comprise:
1 Motor connection: version with angled connector
2 Additional earthing terminal
3 Housing, with black protective coating
4 Axial flange with four mounting points conforming to standard DIN 42918
5 Smooth shaft end conforming to standard DIN 42918

BRS3 motor offer

3-phase stepper motors			BRS	364	366	368	397	39A	39B	3AC	3AD
											
Flange size		–	mm	57			85			110	
Maximum torque		M_{max}	Nm	0.45…1.50			1.7…6.0			12.0…16.5	
Holding torque		M_H	Nm	0.45…1.70			1.92…6.78			13.5…19.7	
Number of steps		z	–	200 / 400 / 500 / 1000 / 2000 / 4000 / 5000 / 10 000							
Step angle		α	°	1.8 / 0.9 / 0.72 / 0.36 / 0.18 / 0.09 / 0.072 / 0.036							
Phase current	W winding	–	A rms	–		0.9	1;75	2	2.25	4.1	4.75
	H winding			5.2	5.8		5.8			–	
Weight		–	kg	0.7	0.95	2	2.1	3.2	4.3	8.2	11.2
Degree of protection according to standard IEC/EN 60034-5		–	–	IP 56 (except for shaft end - IP 41)							
Ambient air temperature		–	°C	- 25…+ 40							
Winding insulation class according to standard IEC/EN 60034-1		–	–	F (maximum temperature for windings 155°C)							

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BRS2 motors: page 20

Lexium SD3 motion control

BRS3 3-phase stepper motors

For Lexium SD315 drives

BRS368 stepper motor

BRS36● stepper motor

Example:	B	R	S	3	6	8	H	1	3	1	A	C	A
Motor type **S** = stepper motor	B	R	**S**	3	6	8	H	1	3	0	A	C	A
Number of motor phases **3** = 3 phases	B	R	S	**3**	6	8	H	1	3	1	A	C	A
Flange size **6** = 57 mm	B	R	S	3	**6**	8	H	1	3	1	A	C	A
Motor length **4** = 42 mm **6** = 56 mm **8** = 79 mm	B	R	S	3	6	**8**	H	1	3	1	A	C	A
Winding type *(1)* **H** = 34 V ∼ (48 V ⎓)	B	R	S	3	6	8	**H**	1	3	1	A	C	A
Shaft type **0** = Ø 6.35 mm smooth shaft, IP 41 **1** = Ø 8 mm smooth shaft, IP 41 **S** = to customer specification	B	R	S	3	6	8	H	**1**	3	1	A	C	A
Centering collar **3** = 38 mm	B	R	S	3	6	8	H	1	**3**	1	A	C	A
Encoder *(2)* **0** = without encoder **1** = with encoder (1000 points/turn)	B	R	S	3	6	8	H	1	3	**1**	A	C	A
Holding brake *(2)* **A** = without holding brake **F** = with holding brake	B	R	S	3	6	8	H	1	3	1	**A**	C	A
Type of connection **A** = end with flying leads **B** = terminals **C** = connector	B	R	S	3	6	8	H	1	3	1	A	**C**	A
Second shaft end *(2)* **A** = without second shaft end **B** = with second shaft end	B	R	S	3	6	8	H	1	3	1	A	C	**A**

Dimensions (overall in mm)

Motor type	BRS	364	366	368
W x H		57.2 x 57.2		
D		42	56	79

(1) Possible motor/shaft type combinations depending on the length of the motor:
*- Motor lengths **4** and **6** = 0*
*- Motor length **8** = 1*
(2) The "Holding brake" and "Encoder" options are not compatible with the "Second shaft end" option.

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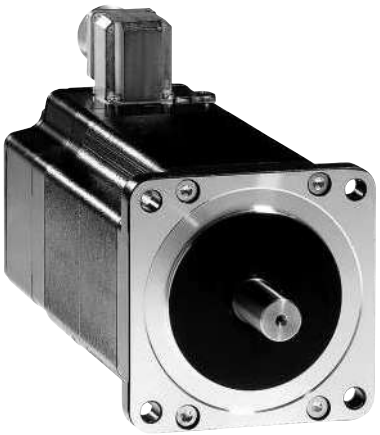
Lexium SD3 motion control

BRS3 3-phase stepper motors

For Lexium SD315 drives



BRS39● stepper motor

BRS39● stepper motor

Example:	B	R	S	3	9	7	H	2	6	1	A	C	A
Motor type **S** = stepper motor	B	R	**S**	3	9	7	H	2	6	1	A	C	A
Number of motor phases **3** = 3 phases	B	R	S	**3**	9	7	H	2	6	1	A	C	A
Flange size **9** = 85 mm	B	R	S	3	**9**	7	H	2	6	1	A	C	A
Motor length **7** = 68 mm **A** = 98 mm **B** = 128 mm	B	R	S	3	9	**7**	H	2	6	1	A	C	A
Winding type **H** = 34 V ∼ (48 V ⎓)	B	R	S	3	9	7	**H**	2	6	1	A	C	A
Shaft type *(1)* **2** = Ø 9.5 mm smooth shaft, IP 41 **3** = Ø 12 mm smooth shaft, IP 41 **4** = Ø 14 mm smooth shaft, IP 41 **5** = Ø 9.5 mm disc key, IP 41 **6** = Ø 12 mm disc key, IP 41 **7** = Ø 14 mm disc key, IP 41	B	R	S	3	9	7	H	**2**	6	1	A	C	A
Centering collar **6** = 60 mm **7** = 73 mm	B	R	S	3	9	7	H	2	**6**	1	A	C	A
Encoder *(2)* **0** = without encoder **1** = with encoder (1000 points/turn)	B	R	S	3	9	7	H	2	6	**1**	A	C	A
Holding brake *(2)* **A** = without holding brake **F** = with holding brake	B	R	S	3	9	7	H	2	6	1	**A**	C	A
Type of connection **A** = end with flying leads **B** = terminals **C** = connector	B	R	S	3	9	7	H	2	6	1	A	**C**	A
Second shaft end *(2)* **A** = without second shaft end **B** = with second shaft end	B	R	S	3	9	7	H	2	6	1	A	C	**A**

Dimensions (overall in mm)

Motor type	BRS	397	39A	39B
W x H		85 x 85		
D		67.5	97.5	127.5

(1) Possible motor/shaft type combinations depending on the length of the motor:
*- Motor length **7** = 2, 3, 5, 6*
*- Motor length **A** = 2, 3, 5 , 6*
*- Motor length **B** = 4, 7*
(2) The "Holding brake" and "Encoder" options are not compatible with the "Second shaft end" option.

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Lexium SD3 motion control

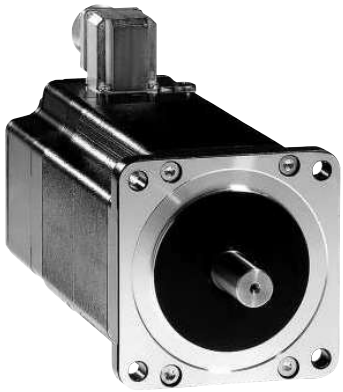
BRS3 3-phase stepper motors

For Lexium SD326 and SD328 drives

BRS368 stepper motor

BRS36● stepper motor

Example:	B	R	S	3	6	8	W	1	3	1	A	B	A
Motor type **S** = stepper motor	B	R	**S**	3	6	8	W	1	3	0	A	B	A
Number of motor phases **3** = 3 phases	B	R	S	**3**	6	8	W	1	3	1	A	B	A
Flange size **6** = 57 mm	B	R	S	3	**6**	8	W	1	3	1	A	B	A
Motor length **8** = 79 mm	B	R	S	3	6	**8**	W	1	3	1	A	B	A
Maximum voltage **W** = 230 V ~ (325 V ⎓)	B	R	S	3	6	8	**W**	1	3	1	A	B	A
Shaft type **0** = Ø 6.35 mm smooth shaft, IP 41 **1** = Ø 8 mm smooth shaft, IP 41	B	R	S	3	6	8	W	**1**	3	1	A	B	A
Centering collar **3** = 38 mm	B	R	S	3	6	8	W	1	**3**	1	A	B	A
Encoder *(1)* **0** = without encoder **1** = with encoder (1000 points/turn)	B	R	S	3	6	8	W	1	3	**1**	A	B	A
Holding brake *(1)* **A** = without holding brake **F** = with holding brake	B	R	S	3	6	8	W	1	3	1	**A**	B	A
Type of connection **B** = terminals **C** = connector	B	R	S	3	6	8	W	1	3	1	A	**B**	A
Second shaft end *(1)* **A** = without second shaft end **B** = with second shaft end	B	R	S	3	6	8	W	1	3	1	A	B	**A**



BRS39● stepper motor

BRS39● stepper motor

Example:	B	R	S	3	9	7	W	2	6	0	A	B	A
Motor type **S** = stepper motor	B	R	**S**	3	9	7	W	2	6	0	A	B	A
Number of motor phases **3** = 3 phases	B	R	S	**3**	9	7	W	2	6	0	A	B	A
Flange size **9** = 85 mm	B	R	S	3	**9**	7	W	2	6	0	A	B	A
Motor length **7** = 68 mm **A** = 98 mm **B** = 128 mm	B	R	S	3	9	**7**	W	2	6	0	A	B	A
Maximum voltage **W** = 230 V ~ (325 V ⎓)	B	R	S	3	9	7	**W**	2	6	0	A	B	A
Shaft type *(2)* **2** = Ø 9.5 mm smooth shaft, IP 41 **3** = Ø 12 mm smooth shaft, IP 41 **4** = Ø 14 mm smooth shaft, IP 41 **5** = Ø 9.5 mm disc key, IP 41 **6** = Ø 12 mm disc key, IP 41 **7** = Ø 14 mm disc key, IP 41	B	R	S	3	9	7	W	**2**	6	0	A	B	A
Centering collar **6** = 60 mm **7** = 73 mm	B	R	S	3	9	7	W	2	**6**	0	A	B	A
Encoder *(1)* **0** = without encoder **1** = with encoder (1000 points/turn)	B	R	S	3	9	7	W	2	6	**0**	A	B	A
Holding brake *(1)* **A** = without holding brake **F** = with holding brake	B	R	S	3	9	7	W	2	6	0	**A**	B	A
Type of connection **B** = terminals **C** = connector	B	R	S	3	9	7	W	2	6	0	A	**B**	A
Second shaft end *(1)* **A** = without second shaft end **B** = with second shaft end	B	R	S	3	9	7	W	2	6	0	A	B	**A**

(1) The "Holding brake" and "Encoder" options are not compatible with the "Second shaft end" option.

(2) Possible motor/shaft type combinations depending on the length of the motor:
- Motor length **7** *= 2, 3, 5, 6*
- Motor length **A** *= 2, 3, 5, 6*
- Motor length **B** *= 4, 7*

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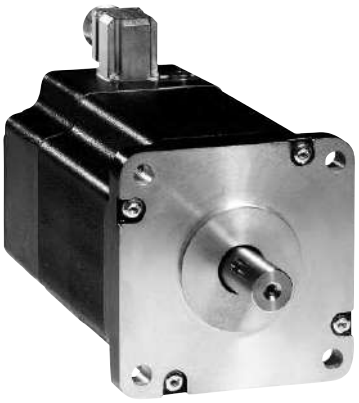
Lexium SD3 motion control

BRS3 3-phase stepper motors

For Lexium SD326 and SD328 drives



BRS3A● stepper motor

BRS3A● stepper motor

Example:	B	R	S	3	A	C	W	8	5	0	A	B	A
Motor type **S** = stepper motor	B	R	**S**	3	A	C	W	8	5	0	A	B	A
Number of motor phases **3** = 3 phases	B	R	S	**3**	A	C	W	8	5	0	A	B	A
Flange size **A** = 110 mm	B	R	S	3	**A**	C	W	8	5	0	A	B	A
Motor length **C** = 180 mm **D** = 230 mm	B	R	S	3	A	**C**	W	8	5	0	A	B	A
Maximum voltage **W** = 230 V ~ (325 V ⎓)	B	R	S	3	A	C	**W**	8	5	0	A	B	A
Shaft type **8** = Ø 19 mm parallel key, IP 41	B	R	S	3	A	C	W	**8**	5	0	A	B	A
Centering collar **5** = 56 mm	B	R	S	3	A	C	W	8	**5**	0	A	B	A
Encoder *(1)* **0** = without encoder **1** = with encoder (1000 points/turn)	B	R	S	3	A	C	W	8	5	**0**	A	B	A
Holding brake *(1)* **A** = without holding brake **F** = with holding brake	B	R	S	3	A	C	W	8	5	0	**A**	B	A
Type of connection **B** = terminals **C** = connector	B	R	S	3	A	C	W	8	5	0	A	**B**	A
Second shaft end *(1)* **A** = without second shaft end **B** = with second shaft end	B	R	S	3	A	C	W	8	5	0	A	B	**A**

Dimensions (overall in mm)

Motor type	BRS	368	397	39A	39B	3AC	3AD
W x H		57.2 x 57.2	85 x 85			110 x 110	
D		79	67.5	97.5	127.5	180	228

(1) The "Holding brake" and "Encoder" options are not compatible with the "Second shaft end" option.

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SD2 drives: page 6
BRS2 motors: page 20

Lexium SD3 motion control
BRS3 3-phase stepper motors
Option: GBX planetary gearboxes

PF080936

GBX planetary gearboxes

PF080938

GBK adaptor kit

Presentation

In many cases, motion control requires the use of planetary gearboxes to adapt speeds and torques, while ensuring the precision demanded by the application.

Schneider Electric has selected GBX gearboxes made by Neugart to be used in association with the BRS3 motor range.
Combining BRS3 motors with the most appropriate planetary gearboxes makes them very easy to mount and ensures simple, risk-free operation.

The 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. Available in 4 sizes (GBX 40...GBX 120), planetary gearboxes are offered in 10 reduction ratios (3:1...25:1).

The table on page 49 shows the most suitable motor and GBX planetary gearbox combinations.
For other combinations or any additional information about planetary gearbox characteristics, see the BRS3 motor data sheets or visit our website www.schneider-electric.com.

A GBK adaptor kit is offered for assembling the BRS3 motor and the GBX 40… GBX 120 planetary gearboxes (see page 49).

The adaptor kit comprises:
- An adaptor plate
- A shaft end adaptor, depending on the model (depends on the motor/planetary gearbox combination)
- Fixing accessories for mounting the plate on the planetary gearbox
- Fixing accessories for mounting the motor

References

Size	Reduction ratio	Reference	Weight kg
GBX 40	3:1, 5:1 and 8:1	**GBX 040 ●●● K**	0.350
GBX 60	3:1, 4:1, 5:1 and 8:1	**GBX 060●●● K**	0.900
	9:1, 12:1, 15:1, 16:1, 20:1 and 25:1	**GBX 060●●● K**	1.100
GBX 80	3:1, 4:1, 5:1 and 8:1	**GBX 080●●● K**	2.100
	9:1, 12:1, 15:1, 16:1, 20:1 and 25:1	**GBX 080●●● K**	2.600
GBX 120	3:1, 4:1, 5:1 and 8:1	**GBX 120 ●●● K**	6.000
	9:1, 12:1, 15:1, 16:1, 20:1 and 25:1	**GBX 120●●● K**	8.000

To order a GBX 040…GBX 120 planetary gearbox, complete each reference above as follows:

			GBX	●●●	●●●	K
Size	Housing diameter	40 mm		**040**		
		60 mm		**060**		
		80 mm		**080**		
		120 mm		**120**		
Reduction ratio		3:1			**003**	
		4:1			**004**	
		5:1			**005**	
		8:1			**008**	
		9:1			**009**	
		12:1			**012**	
		15:1			**015**	
		16:1			**016**	
		20:1			**020**	
		25:1			**025**	
Mounting with adaptor kit						**K**

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BRS3 stepper motor/GBX planetary gearbox combinations

Reduction ratios from 3:1 to 25:1

Motor type	Shaft diameter (in mm) *(1)*	Centering collar (in mm) *(1)*	Reduction ratio								
			3:1	4:1	5:1	8:1	9:1	12:1	15:1 16:1	20:1	25:1
BRS364●03	6.35	38	GBX 040	–	GBX 040	GBX 040	–	–	–	–	–
BRS366●03	6.35	38	GBX 040	–	GBX 040	GBX 040	–	–	–	–	–
BRS368W13	8	38	GBX 060	GBX 060	GBX 060	GBX 060	GBX 060	GBX 060	GBX 060	GBX 060	GBX 060
BRS397W36	12	60	GBX 080	GBX 080	GBX 080	GBX 080	GBX 080	GBX 080	GBX 080	GBX 080	GBX 080
BRS39AW36	12	60	GBX 080	GBX 080	GBX 060	GBX 080	GBX 080	GBX 080	GBX 080	GBX 080	GBX 080
BRS39BW46	14	60	GBX 080	GBX 080	GBX 080	GBX 080	GBX 080	GBX 080	GBX 080	GBX 080	GBX 080
BRS3ACW85	19	56	GBX 120	GBX 120	GBX 120	GBX 120	GBX 120	GBX 120	GBX 120	GBX 120	GBX 120
BRS3ADW85	19	56	GBX 120	GBX 120	GBX 120	GBX 120	GBX 120	GBX 120	GBX 120	GBX 120	–

(1) GBX planetary gearboxes must be installed with the shaft and the centering collar specified in each of the above columns.

GBX 080 *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.*

Adaptor kit for GBX planetary gearboxes *(1)*

To order a GBK adaptor kit, complete each reference as follows:

			GBK ●●●	●●●	●	S
Planetary gearbox size	Housing diameter	40 mm	**040**			
		60 mm	**060**			
		80 mm	**080**			
		120 mm	**120**			
Flange size		BRS36●		**057**		
		BRS39●		**085**		
		BRS3A●		**110**		
Associated BRS3 motor		BRS3A●			**0**	
		BRS364, BRS366, BRS397, BRS39A *(2)*			**2**	
		BRS368, BRS39B *(2)*			**3**	
BRS3 motor adaptor						**S**

GBK adaptor kit/BRS3 stepper motor combination

Type of gearbox	BRS motor							
	364	366	368	397	39A	39B	3AC	3AD
GBK 040 057 2 S	■	■						
GBK 060 057 3 S			■					
GBK 080 085 2 S				■	■			
GBK 080 085 3 S						■		
GBK 120 110 0 S							■	■

■ **Compatible**
Not compatible

(1) Weight of adaptor kit:
- *GBK 040: 0.150 kg*
- *GBK 060: 0.200 kg*
- *GBK 080: 0.450 kg*
- *GBK 120: 0.650 kg*

(2) Motor to be selected according to the above GBK adaptor kit/BRS3 motor combination table.

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