

# Lexium 28 Motion control

Catalog

March 2015



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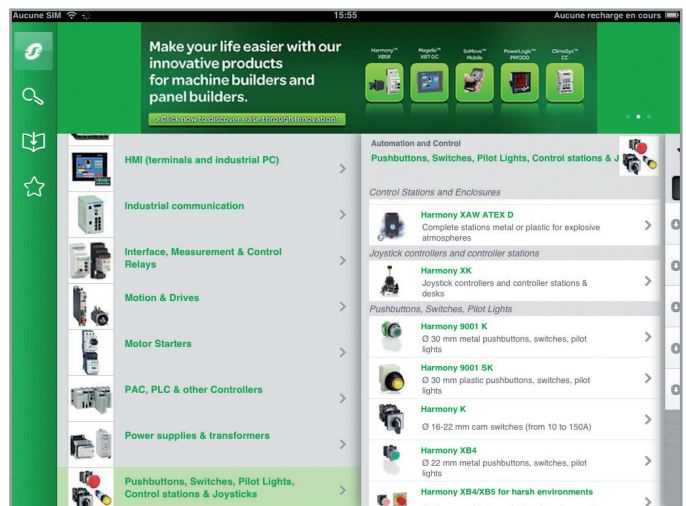
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## Lexium 28 motion control

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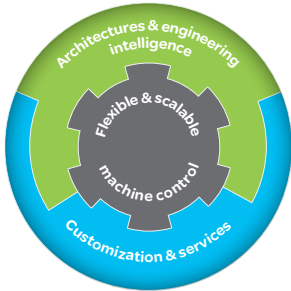
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Maximize your business and machine performance with MachineStruxure



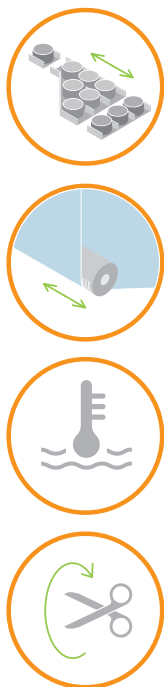
Machine builders like you are constantly looking for new ways to design and build more innovative machines in less time and at lower cost. MachineStruxure™ can help.

The NEXT generation of MachineStruxure is a complete machine automation solution that provides flexible and scalable machine control, ready-to-use architectures, efficient engineering solutions, and comprehensive customization and engineering support services. It can help you meet your challenges for improved efficiency and greater productivity, as well as allow you to deliver higher added value to your customers throughout the entire machine life cycle.

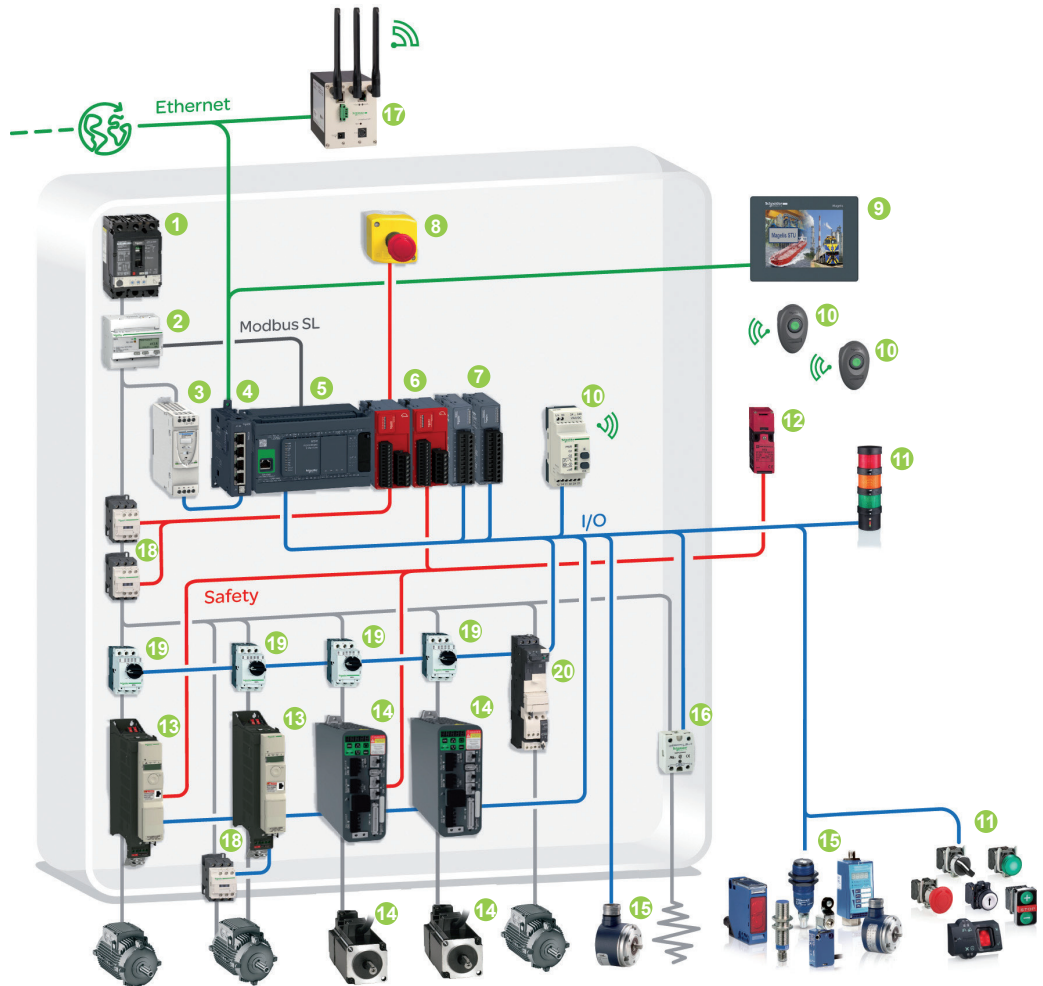
### Ready-to-use architectures and function blocks

- > Tested, Validated, and Documented Architectures (TVDA) are just one of the ways we help you reduce design time.
- > Whether your machines are simple or complex, Application Function Blocks (AFBs) make system design fast and easy.

### Lexium 28 is part of MachineStruxure



Application Function Blocks (AFB)



### Compact / Hardwired / Logic Controller **Modicon M241**

#### Solution Breakdown

- |  |  |
|--|--|
| 1 Compact NSX circuit breaker  | 11 Harmony XB4/XB5 Control & signaling units                         |
| 2 IEM32 energy meter   | 12 Preventa XCS safety switch  |
| 3 Phaseo switch mode power supply  | 13 Altivar 32 variable speed drive                                   |
| 4 Modicon TM4 Ethernet switch module   | 14 Servo Drive <b>Lexium 28</b> , servo motor <b>BCH2</b>            |
| 5 <b>Modicon M241</b> logic controller   | 15 OsiSense proximity & photoelectric sensors, limit switch, encoder |
| 6 Modicon TM3 functional safety module   | 16 Zelio Relay solid-state relay                                     |
| 7 Modicon TM3 I/O expansion module   | 17 <b>ConneXium</b> wireless Ethernet access                         |
| 8 Harmony XALK emergency stop  | 18 TeSys D switch connector fuse                                     |
| 9 Magelis STO/STU HMI  | 19 TeSys GV2L magnetic circuit breaker                               |
| 10 Harmony XB5R wireless and batteryless pushbutton, configurable access point | 20 TeSys GV2M/3P D.O.L. / reversing starter                          |

Lexium 28 & BCH2: optimized servo bundles for compact machines

### Servo range with best-in-class performance

The predefined servo bundles of Lexium 28 servo drive & BCH2 servo motor are optimized for easy integration & commissioning in your machine. It includes standard interfaces, embedded safety function and DC-bus sharing.



- > CANopen / CANmotion
- > Pulse Train

### Reduce your time to market

- > Automatic tuning and motor identification
- > PLC open motion library

### Increase profitability

- > Designed for optimized & cost effective solutions
- > Drive embedded safety function: Safe-Torque-Off

### Improve efficiency

- > Energy efficient because of DC-bus sharing
- > Predefined servo bundles to fit each machine type

### Simplify integration & maintenance

- > Standard fieldbus interface CANopen / CANmotion
- > Pulse-train-input (PTI) and Pulse-train-output (PTO) interfaces
- > Digital input interface to control simple movements directly by the servo drive: Position sequence mode
- > Analog input interface +/-10 V for speed control mode

### Easy to select



Lexium configurator app

### Online configurator for intuitive product selection

Predefined servo drives and motors bundles include accessories, easy to select because of online configurator... You can get this also as App for mobile devices, see Lexium configurator in App store or Google Play.

Component	Ref	Qty
Power cable	VW3M5D1AR1S	1
Name plate	VW3M2501	1
Power connector	VW3M5D1A	1
Daisy chain cable	VW3M7101R01	1
CANopen cable	VW3M3805R010	1
CANopen RJ45 link	TCSCAR013M120	1
IO terminal block	VW3M1C13	1
IO PTI cable	VW3M1C10R10	1
CN1 IO connector	VW3M1C12	1
Servo motor	BCH2MBA531CA	1
servo drive	LXM28AU5M3X	1
gearbox	GBK040003K	1
GBK adaptor kit	GBK0400400C	1
braking resistor	VW3A7601R07	1
EMC input filter	VW3A4420	1

### Intuitive commissioning & programming



SoMachine programming software

### SoMachine® - One software for commissioning and programming

SoMachine® is the universal programming software for machines automated by MachineStruxure controllers. Simple navigation that requires only fewer clicks delivers a more efficient engineering process. The programming, visualization, and commissioning are handled in just one intuitive tool that is available as a free download.

### SoMove Setup software

In addition to SoMachine the SoMove Setup software can be used for the commissioning of Lexium 28. This could be done in just the same way as it is on other Schneider Electric drives and starters, to configure, adjust, debug, and maintain the drive.



SoMove Setup software

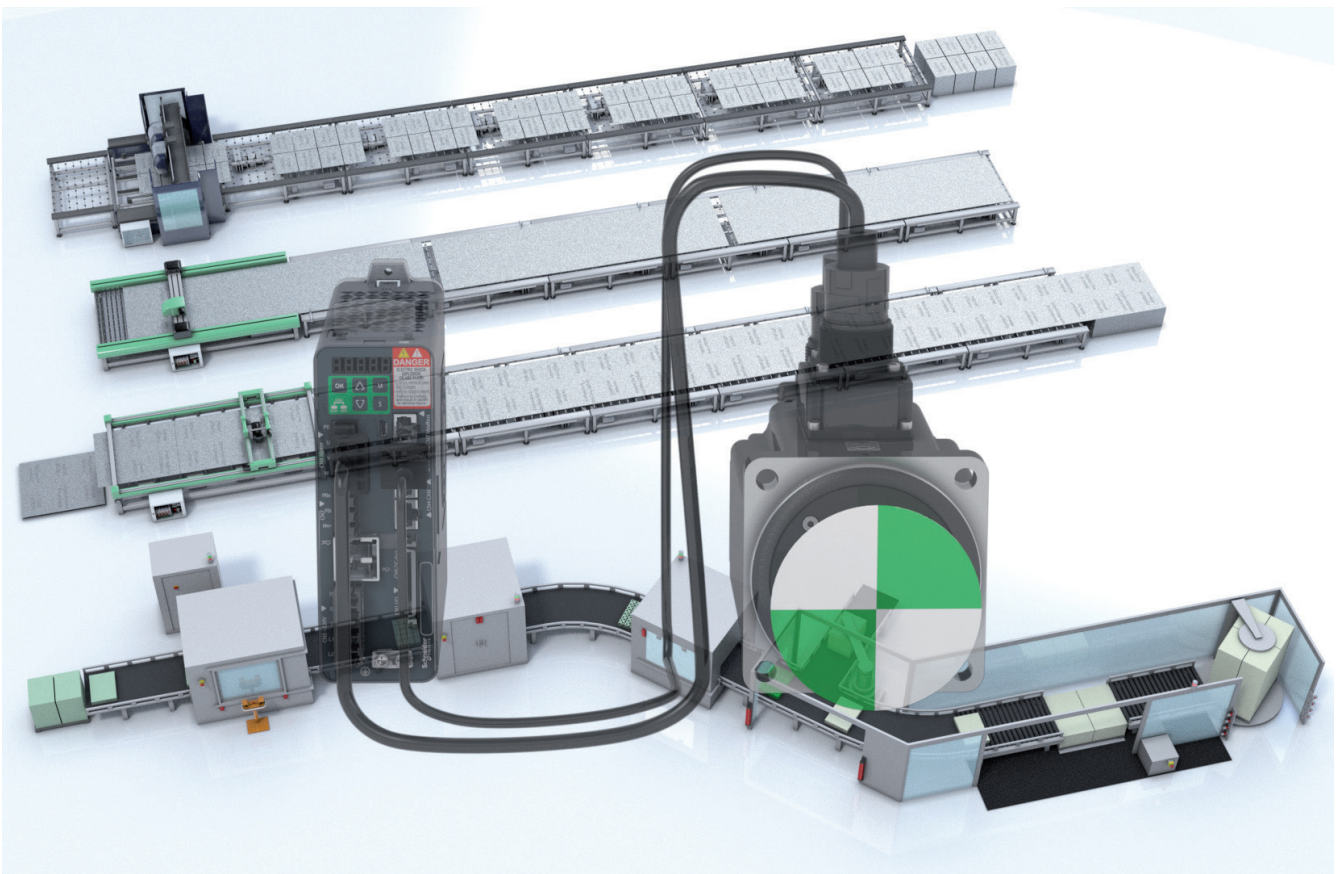
## Achieve benchmark performance

while increasing profitability

Lexium 28 and Lexium BCH2,

the optimized servo bundle for motion control solutions

- > Cost effective
- > Energy efficient
- > Embedded safety



Make the most of your energy<sup>SM</sup>

### Presentation

The Lexium 28 range is defined by AC-servo drives LXM28 for combination with AC-servo motors BCH2.

- The Lexium 28 range offers predetermined combinations to suit the requirements of motion control applications, and optimize installation's performance.
- The combinations of servo motors with servo drives are based on the power class: both servo motor and servo drive have the same power class.
- The bundle of a servo drive with its related servo motor is designed to cover a nominal power from 0.05 kW up to 4.5 kW (0.067 up to 6.03 hp) with 200..240 V mains supply voltage

- The Lexium 28 servo drives are delivered without EMC filter, the EMC immunity is reached with additional EMC filter.

- The Lexium 28 servo drives have degree of protection IP 20.

- BCH2 motors provide a nominal torque from 0.16 Nm to 28.6 Nm and a nominal speed of from 1,500 to 3,000 rpm, depending on the model. They are suitable for a wide variety of applications due to the different levels of motor inertia offered.

### Compact range

The compact dimensions of Lexium 28 servo drives mean they fit very easily into small spaces, thus reducing the size of the installation and the cost of the equipment.

### Applications

- Material working (multi-axis machines, cutting machines, etc.)
- Material handling (conveying, palletizers, warehousing, etc.)
- Assembly line (clamping, etc.)
- Packaging
- Printing
- Winding and unwinding

### SoMove Setup software

SoMove Setup software is used for commissioning, parameter setting, diagnostics and maintenance.

The drives can be configured

- via their integrated HMI interface
- using the SoMove Setup software.

It can also be used for fast device replacement in existing machine installations.

SoMove Setup software is used in just the same way as it is on other Schneider Electric drives, for configuring and optimizing control loops in automatic or manual mode using the Oscilloscope function and for maintenance of the Lexium 28 drive. See page 10.

### Multi-loader tool

The Multi-loader tool enables configurations to be copied from a PC or a servo drive and loaded onto another servo drive. The servo drives do not need to be powered-up (see page 10).

### Flexibility

Lexium 28 servo drives have digital and analog I/O as standard, an interface for CANopen/CANmotion fieldbus and an encoder interface for BCH2 servo motors. The servo drives incorporate numerous functions, including auto-tuning, position, speed, torque control, and the position sequence mode.

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

### Mounting and maintenance

Connecting the servo drives is simplified by identified plug-in connectors, which are easily accessed, mainly on the front panel and also on top of the drive (see Description page 9).



Material working application



Material handling application



Packaging application



Textile application



SoMove Setup software



Multi-loader tool



### Main functions of Lexium 28 servo drives

- Automatic motor identification by the servo drive: the technical data related to the motor is provided from the motor to the drive via the encoder connection cable.
- Filtering: Anti-vibration function for suppression of resonance frequencies of the power train connected with the moving mass of the application
- Monitoring functions:
  - Status monitoring, I/O monitoring
  - Log function to memorize alarm and warning messages (in the drive)
  - Reset function of alarms and warnings
  - Monitoring of drive variables related to motor control and closed loop control

### Additional main functions of Lexium 28 servo drives

- Movement control with digital input interface directly in the servo drive:
  - Relative or absolute positioning mode
  - Velocity mode
  - Torque control mode
  - Position sequence mode: a sequence of up to 32 movements, controlled by a digital input interface

### Control via I/O interface or CANopen/CANmotion fieldbus

The Lexium 28 servo drive is controlled through “CN4 CAN” interface with a CANopen/CANmotion fieldbus control interface. It can also be controlled through numerous digital and analog signals, accessible by “CN1 I/O” interface:

- 2 digital inputs for high performance position capture
- 8 digital inputs
- 5 digital outputs
- 2 analog inputs
- 2 analog outputs
- 1 digital input for the safety function “Safe-Torque-Off”

### Drive functions activated by commissioning software or directly by the HMI interface

- Jog mode: Velocity movement
- “Easy tuning” one-button tuning mode: this function is used to optimize application performance.
- 2 additional tuning functions, which can be activated by the SoMove Setup commissioning software or by the HMI interface:
  - “Comfort tuning” with predefined settings for different mechanical systems such as spindle axes (e.g. portal axes), transportation belt, vertical axes (e.g. cantilever axes)
  - “Auto-adaptive tuning”

### Operating modes for the Lexium 28 via PTI / PTO interface

Lexium 28 drives movement can be managed by a machine controller (Modicon M221 logic controller) with pulse-train-output (PTO) interface or the PTO interface from another (Lexium28) servo drive. The corresponding pulse-train-input (PTI) of the Lexium 28 drive is then electrically connected to CN1 I/O interface.

### Operating modes for the Lexium 28 via the CANopen and CANmotion fieldbus

The following operating modes are available:

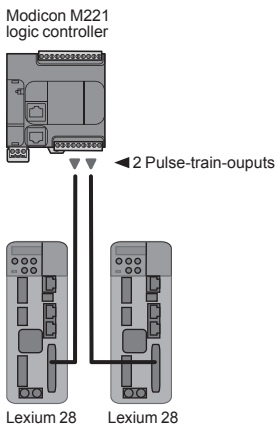
- Homing (in accordance with functional profile CiA DSP 402)
- Point-to-point mode (in accordance with functional profile CiA DSP 402)
- Position gear mode
- Cyclic synchronous position mode, cyclic synchronous velocity mode, cyclic synchronous torque mode (with CANmotion interface)

For more details of each integrated function, please consult our web site: [www.schneider-electric.com](http://www.schneider-electric.com).

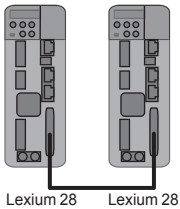
### Embedded safety function STO

The Lexium 28 range of servo drives is an integral part of the MachineStruxure™ safety system “Preventa solutions for efficient machine safety” with its drive embedded Safe-Torque-Off (STO) function.

This STO function meets the requirements of SIL 2 according IEC 61800-5-2 / IEC62061 / IEC 61508 as well as up to category 3 and PL d according to EN ISO 13849-1. It simplifies the setup of installations requiring complex safety equipment and improves performance during maintenance operations.



Example of architecture with control by Modicon M221 logic controller



Example of a Lexium28 drive controlling another Lexium 28 drive with PTO/PTI interface



**Guard monitoring safety function held by Lexium 28.**  
 More details on our web site: [www.schneider-electric.com](http://www.schneider-electric.com)  
 > Solutions > Process Systems, Machine Control >  
**Machine Safety**

# Lexium 28 motion control

## Combinations: Lexium 28 servo drive and BCH2 servo motor



Lexium 28  
50 W, 100 W, 200 W,  
400 W and 750 W



Lexium 28  
1 kW and 1.5 kW



Lexium 28  
2 kW



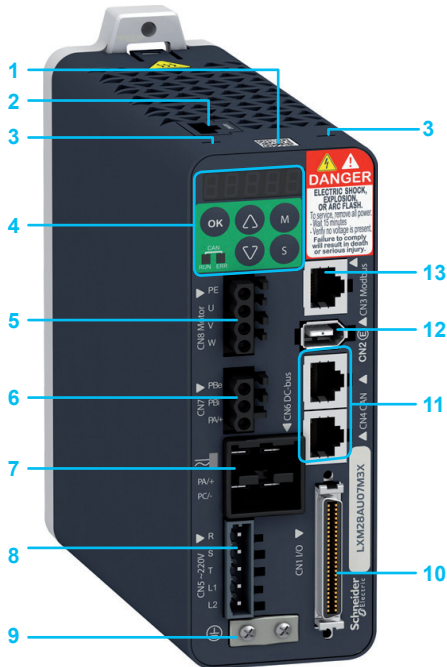
Lexium 28  
3 kW and 4.5 kW

BCH2 servo motor/Lexium 28 servo drive combinations										
Available power output		Nominal speed of rotation	Nominal torque		Maximum peak torque		Servo drive	Servo motor	Inertia (without holding brake)	Motor inertia type
kW	hp	rpm	Nm	ft lbf	Nm	ft lbf			kgcm <sup>2</sup>	
<b>Single-phase supply voltage: 200/240 VAC</b>										
0.05	0.067	3,000	0.16	0.11	0.48	0.35	LXM28AU5M3X	BCH2MBA53●C●5C	0.054	Medium
0.1	0.13	3,000	0.32	0.23	0.96	0.70	LXM28AU01M3X	BCH2MB013●C●5C	0.075	Medium
0.2	0.26	3,000	0.64	0.47	1.92	1.41	LXM28AU02M3X	BCH2LD023●C●5C	0.16	Low
0.3	0.41	1,000	2.86	2.10	8.59	6.33	LXM28AU04M3X	BCH2MM031●C●6C	6.63	Medium
0.4	0.53	3,000	1.27	0.93	3.81	2.81	LXM28AU04M3X	BCH2LD043●C●5C	0.27	Low
0.4	0.53	3,000	1.27	0.93	3.81	2.81	LXM28AU04M3X	BCH2LF043●C●5C	0.67	Low
0.5	0.67	2,000	2.39	1.76	7.16	5.28	LXM28AU07M3X	BCH2MM052●C●6C	6.63	Medium
0.6	0.80	1,000	5.73	4.22	17.19	12.67	LXM28AU07M3X	BCH2MM061●C●6C	6.63	Medium
0.75	1.00	3,000	2.39	1.76	7.16	5.28	LXM28AU07M3X	BCH2HF073●C●5C	1.54	High
0.75	1.00	3,000	2.39	1.76	7.16	5.28	LXM28AU07M3X	BCH2LF073●C●5C	1.19	Low
0.85	1.13	1,500	5.39	3.97	13.8	10.17	LXM28AU10M3X	BCH2MM081●C●6C	13.5	Medium
0.9	1.21	1,000	8.59	6.33	25.77	19.01	LXM28AU10M3X	BCH2MM091●C●6C	9.7	Medium
1	1.34	3,000	3.18	2.34	9.54	7.03	LXM28AU10M3X	BCH2LH103●C●6C	2.4	Low
1	1.34	2,000	4.77	3.51	14.3	10.54	LXM28AU10M3X	BCH2MM102●C●6C	6.63	Medium
1.5	2.01	2,000	7.16	5.28	21.48	15.84	LXM28AU15M3X	BCH2MM152●C●6C	9.7	Medium
<b>3 phase supply voltage: 200/240 VAC</b>										
0.05	0.067	3,000	0.16	0.11	0.48	0.35	LXM28AU5M3X	BCH2MBA53●C●5C	0.054	Medium
0.1	0.13	3,000	0.32	0.23	0.96	0.70	LXM28AU01M3X	BCH2MB013●C●5C	0.075	Medium
0.2	0.26	3,000	0.64	0.47	1.92	1.41	LXM28AU02M3X	BCH2LD023●C●5C	0.16	Low
0.3	0.41	1,000	2.86	2.10	8.59	6.33	LXM28AU04M3X	BCH2MM031●C●6C	6.63	Medium
0.4	0.53	3,000	1.27	0.93	3.81	2.81	LXM28AU04M3X	BCH2LD043●C●5C	0.27	Low
0.4	0.53	3,000	1.27	0.93	3.81	2.81	LXM28AU04M3X	BCH2LF043●C●5C	0.67	Low
0.5	0.67	2,000	2.39	1.76	7.16	5.28	LXM28AU07M3X	BCH2MM052●C●6C	6.63	Medium
0.6	0.80	1,000	5.73	4.22	17.19	12.67	LXM28AU07M3X	BCH2MM061●C●6C	6.63	Medium
0.75	1.00	3,000	2.39	1.76	7.16	5.28	LXM28AU07M3X	BCH2HF073●C●5C	1.54	High
0.75	1.00	3,000	2.39	1.76	7.16	5.28	LXM28AU07M3X	BCH2LF073●C●5C	1.19	Low
0.85	1.13	1,500	5.39	3.97	13.8	10.17	LXM28AU10M3X	BCH2MM081●C●6C	13.5	Medium
0.9	1.21	1,000	8.59	6.33	25.77	19.01	LXM28AU10M3X	BCH2MM091●C●6C	9.7	Medium
1	1.34	3,000	3.18	2.34	9.54	7.03	LXM28AU10M3X	BCH2LH103●C●6C	2.4	Low
1	1.34	2,000	4.77	3.51	14.3	10.54	LXM28AU10M3X	BCH2MM102●C●6C	6.63	Medium
1.5	2.01	2,000	7.16	5.28	21.48	15.84	LXM28AU15M3X	BCH2MM152●C●6C	9.7	Medium
2.0	2.68	3,000	6.37	4.69	19.1	14.08	LXM28AU20M3X	BCH2LH203●C●6C	4.28	Low
2.0	2.68	2,000	9.55	7.04	28.65	21.13	LXM28AU20M3X	BCH2MM202●C●6C	13.5	Medium
2.0	2.68	2,000	9.55	7.04	28.65	21.13	LXM28AU20M3X	BCH2MR202●C●6C	26.5	Medium
3.0	4.02	1,500	19.1	14.08	57.29	42.25	LXM28AU30M3X	BCH2MR301●C●6C	53.56	Medium
3.0	4.02	2,000	14.32	10.56	42.97	31.69	LXM28AU30M3X	BCH2MR302●C●6C	53.56	Medium
3.5	4.69	2,000	16.7	12.31	50.3	37.09	LXM28AU45M3X	BCH2MR352●C●6C	53.56	Medium
4.5	6.03	1,500	28.65	21.13	71.62	52.82	LXM28AU45M3X	BCH2MR451●C●6C	73.32	Medium

Description,  
references,  
dimensions,  
weight

# Lexium 28 motion control

## Lexium 28 servo drive



### Lexium 28 servo drive

#### Description

##### On the drive top side:

- 1 QR code for access to detailed technical data, wiring guide, and installation guide
- 2 Removable terminal (1) for STO function (marked CN9)
- 3 Slot for application name plate

##### On the drive front side:

- 4 HMI interface, 7-segment display, 5 buttons (OK, mode, set, value up, value down) and servo drive status LED
- 5 Removable terminal (1) for motor connection (marked CN8 Motor)
- 6 Removable terminal (1) for braking resistor connection (marked CN7)
- 7 DC-bus connector with status LED "DC-bus charged" (marked CN6 DC-bus)
- 8 Removable terminal (1), 5 terminals (R, S, T, L1, L2) for connecting the 220 V ~ power supply (marked CN5 ~ 220 V)
- 9 Protected earth connector (marked Ⓧ)
- 10 Input/output interface connector (marked CN1 I/O)
- 11 2x RJ 45 connectors for CANopen/CANmotion fieldbus connection (marked CN4 CAN)
- 12 Connector for motor encoder: 20-bit single-turn absolute encoder, type ServoSense R (marked CN2 Ⓧ)
- 13 RJ 45 connector for Modbus serial link (marked CN3 Modbus)

(1) Removable spring terminals are supplied with each Lexium 28 servo drive.

#### References

To order a Lexium 28 servo drive, make up the reference as follows:

Example	L	X	M	2	8	A	U	A	5	M	3	X
Lexium 28 AC servo drive	L	X	M	2	8							
Interface	CANopen and CANmotion fieldbus					A						
Power	50 W (0.067 hp)						U	A	5			
	100 W (0.13 hp)						U	0	1			
	200 W (0.26 hp)						U	0	2			
	400 W (0.53 hp)						U	0	4			
	750 W (1.00 hp)						U	0	7			
	1 kW (1.34 hp)						U	1	0			
	1.5 kW (2.01 hp)						U	1	5			
	2 kW (2.68 hp)						U	2	0			
	3 kW (4.02 hp)						U	3	0			
	4.5 kW (6.03 hp)						U	4	5			
Supply voltage	200...240 V ~, no EMC filter									M	3	X

#### Dimensions and weight

Servo drives	Dimensions (overall)		Weight	
	Width x Height x Depth (W x H x D)		kg	lb
	mm	in.		
LXM28AUA5M3X LXM28AU01M3X LXM28AU02M3X LXM28AU04M3X LXM28AU07M3X	55 x 150 x 146	2.17 x 5.91 x 5.75	1.300	2.866
LXM28AU10M3X LXM28AU15M3X	55 x 150 x 170	2.17 x 5.91 x 6.69	1.400	3.086
LXM28AU20M3X	62 x 170 x 184	2.44 x 6.69 x 7.24	1.800	3.968
LXM28AU30M3X LXM28AU45M3X	116 x 234 x 186	4.56 x 9.21 x 7.32	4.000	8.818



Configuration with the SoMove Setup software



TCSMCNAM3M002P

### SoMove Setup software

#### Presentation

SoMove Setup software is used on Lexium 28 servo drives in just the same way as it is on other Schneider Electric drives and starters, to configure, adjust, debug, and maintain the drive.

The configuration of Lexium 28 servo drives can be done using the USB/RJ 45 cordset TCSMCNAM3M002P (used between the PC and the Lexium 28, on CN3 interface).

SoMove Setup software can be downloaded from our web site: [www.schneider-electric.com](http://www.schneider-electric.com)

More information: see catalog "SoMove Setup software" (DIA2ED2140801EN) on our web site: [www.schneider-electric.com](http://www.schneider-electric.com)

#### References

Designation	Description	Reference	Weight kg/lb
USB/RJ 45 cordset	<ul style="list-style-type: none"> <li>■ For connecting a PC to the device (Lexium 28)</li> <li>■ Length: 2.5 m (8.2 ft.)</li> <li>■ Equipped with a USB connector (PC end), and an RJ 45 connector (Device end)</li> </ul>	TCSMCNAM3M002P	0.160 / 0.353

### Multi-loader configuration tool

#### Presentation

The Multi-loader tool enables several configurations to be copied from a PC or a Lexium 28 servo drive and loaded onto another servo drive.

The Lexium 28 servo drives do not need to be powered up.



Configuration of a Lexium 28 in its packaging with the VW3A8121 Multi-loader tool + VW3A8126 cordset



VW3A8126

#### References

Designation	Description	Reference	Weight kg/lb
Multi-loader configuration tool	Supplied with: <ul style="list-style-type: none"> <li>□ 1 cordset equipped with two RJ 45 connectors</li> <li>□ 1 cordset equipped with one type A USB connector and one mini B USB connector</li> <li>□ 1 x 2 GB SD memory card</li> <li>□ 1 x female/female RJ 45 adapter</li> <li>□ 4 AA 1.5 V LR6 round batteries</li> </ul>	VW3A8121	0.910 / 2.006
Cordset for multi-loader tool	For connecting the multi-loader tool to the Lexium 28 servo drive in its packaging. Equipped with: <ul style="list-style-type: none"> <li>□ A non-locking RJ 45 connector with special mechanical catch on the drive end</li> <li>□ An RJ 45 connector on the Multi-loader end</li> </ul>	VW3A8126	0.065 / 0.143



VW3M7101R01



VW3M2207



VW3M4C21



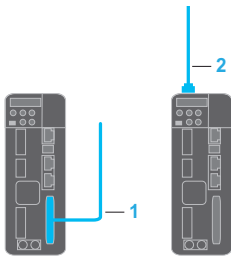
VW3M4C22



VW3M1C12



VW3M1C13



VW3M1C10R●●

VW3M1C20R●●



VW3M2501



Servo drive with application name plate VW3M2501

### Connection accessories

#### Cordsets

Designation	Use	Description	Length m/ft	Unit reference	Weight kg/lb
<b>Daisy chain connection of the DC-bus</b> (sold in lots of 5)	Between LXM28A●●●●M3X and LXM28A●●●●M3X drives	Equipped with 2 connectors	0.1 / 0.33	VW3M7101R01	0.150/ 0.220

#### Cable

Designation	Use	Description	Length m/ft	Reference	Weight kg/lb
<b>Shielded cable for Daisy chain connection of the DC-bus</b>	Between LXM28A●●●●M3X and LXM28A●●●●M3X drives	This cable can be used with DC-bus connector kit VW3M2207	15 / 49.21	VW3M7102R150	3.650/ 8.047

#### Connectors

Designation	Use	Description	Unit reference	Weight kg/lb
<b>DC-bus connector kit</b>	Lexium 28	10 connectors for creating extension cordsets for the CN6 DC-bus interface	VW3M2207	0.050/ 0.110
<b>Replacement connector sets</b>	50 W (0.067 hp), 100 W (0.13 hp), 200 W (0.26 hp), 400 W (0.53 hp), 750 W (1.00 hp), 1 kW (1.34 hp), and 1.5 kW (2.01 hp) drives (sold in lots of 3)	3 connectors: 1 for CN5, 1 for CN7, and 1 for CN8 interfaces	VW3M4C21	0.100/ 0.220
	2 kW (2.68 hp), 3 kW (4.02 hp), and 4.5 kW (6.03 hp) drives (sold in lots of 2)	3 connectors: 1 for CN5, 1 for CN7, and 1 for CN8 interfaces	VW3M4C22	0.100/ 0.220
<b>I/O connector</b> (sold in lots of 3)	Lexium 28	SUB-D 50-pin connector for CN1 I/O interface	VW3M1C12	0.100/ 0.220

<b>I/O terminal block module</b>	Lexium 28	Terminal block + Cordset Composed with 2x SUB-D 50-pin connectors type VW3M1C12, and one 0.5 m / 1.640 ft. cable, for CN1 I/O interface connection	VW3M1C13	0.380/ 0.838
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#### I/O PTI connection cordsets

Description	Length m/ft	Reference	Weight kg/lb
Equipped with one SUB-D 50-pin connector for connection on CN1 interface (drive side), and open end (controller side) (item 1)	1 / 3.28	VW3M1C10R10	0.100/ 0.220
	2 / 6.56	VW3M1C10R20	0.200/ 0.441
	3 / 9.84	VW3M1C10R30	0.300/ 0.661

#### STO connection cordsets

Equipped with one Molex 4-pin connector for connection on CN9 interface (drive side), and open end (controller side) (item 2)	1 / 3.28	VW3M1C20R10	0.100/ 0.220
	2 / 6.56	VW3M1C20R20	0.200/ 0.441
	3 / 9.84	VW3M1C20R30	0.300/ 0.661

#### Accessories

Designation	Use	Dimensions mm / in.	Unit reference	Weight kg/lb
<b>Application name plate</b> (sold in lots of 50)	This contains information about the servo drive. To be inserted onto a dedicated slot on the top of the servo drive	38.5 x 13 / 1.516 x 0.512	VW3M2501	0.100/ 0.220

# Lexium 28 motion control

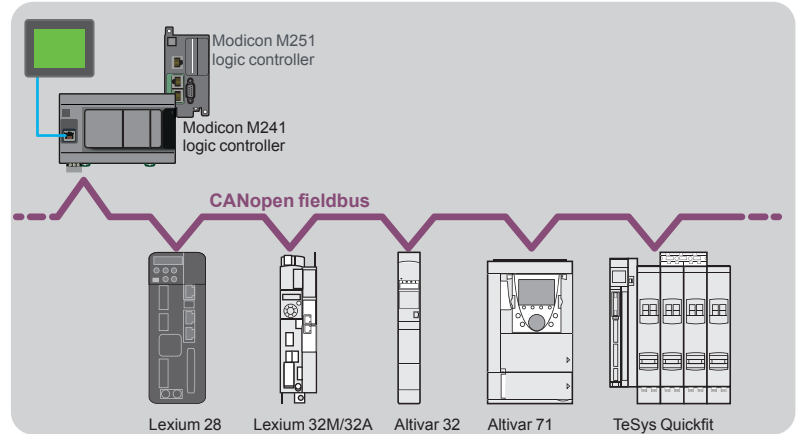
Lexium 28 servo drive

Communication on CANopen/CANmotion fieldbus

## CANopen and CANmotion fieldbus

### Presentation

Lexium 28 servo drives integrate the CANopen communication protocol as standard.



The CANopen fieldbus is specifically designed for integration in control system architectures. It provides openness and interoperability for various devices (drives, motor starters, smart sensors, etc.).

A tiered CANopen connectivity solution reduces costs and optimizes the creation of the control system architecture, providing:

- Reduced cabling time
- Greater reliability of the load
- Flexibility should you need to add or remove equipment

This facilitates the set up.

### Connection

Lexium 28 servo drives are connected to CANopen/CANmotion fieldbus via 2 RJ 45 connectors, providing an optimized solution for daisy chain connection to the CANopen fieldbus.

The same communication port provides access to either the CANopen or CANmotion fieldbus.



# Lexium 28 motion control

## Lexium 28 servo drive

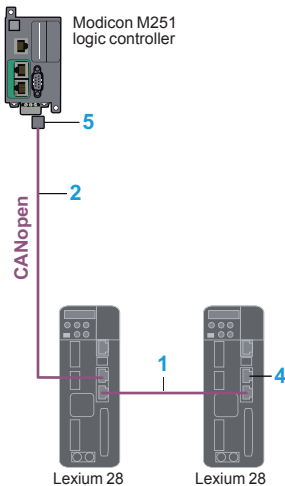
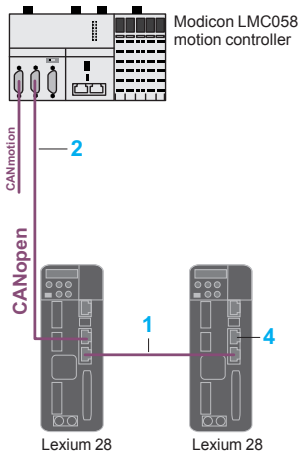
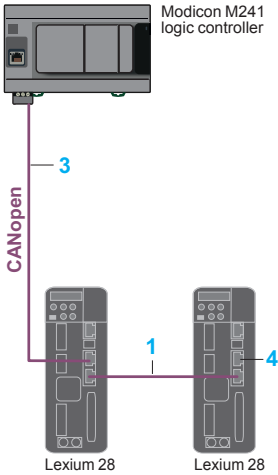
### Communication on CANopen/CANmotion fieldbus

#### CANopen/CANmotion fieldbus for Lexium 28 servo drives

Lexium 28 servo drives can be directly connected to CANopen/CANmotion fieldbus using the RJ 45 connectors.

To simplify daisy chain connection, each servo drive is equipped with two RJ 45 connectors (marked CN4 CAN).

The communication function provides access to the servo drive's configuration, adjustment, control, and monitoring functions.



#### Cordsets and cables (1)

Description	Item no.	Length m/ft	Reference	Weight kg/lb
<b>CANopen cordsets (1)</b> Equipped with 2 RJ 45 connectors	1	0.3/ 0.98	VW3CANCARR03	0.320/ 0.705
		1/ 3.28	VW3CANCARR1	0.500/ 1.102
<b>CANopen cordsets (1)</b> Equipped with one 9-way female SUB-D connector with integrated line terminator and one RJ 45 connector	2	1/ 3.28	VW3M3805R010	0.080/ 0.176
		3/ 9.843	VW3M3805R030	0.139/ 0.306
<b>CANopen cables (1)</b> Standard cables, CE marking, Low smoke, zero halogen, Flame retardant (IEC 60332-1)	3	50/ 164.04	TSXCANCA50	4.930/ 10.869
		100/ 328.08	TSXCANCA100	8.800/ 19.401
		300/ 984.25	TSXCANCA300	24.560/ 54.145
		50/ 164.04	TSXCANCB50	3.580/ 7.893
<b>CANopen cables (1)</b> UL certification, CE marking, Flame retardant (IEC 60332-2)	3	100/ 328.08	TSXCANCB100	7.840/ 17.284
		300/ 984.25	TSXCANCB300	21.870/ 48.215
		50/ 164.04	TSXCANCD50	3.510/ 7.738
<b>CANopen cables (1)</b> Cables for harsh environments (2) or mobile installation, CE marking, Low smoke, zero halogen, Flame retardant (IEC 60332-1)	3	100/ 328.08	TSXCANCD100	7.770/ 17.130
		300/ 984.25	TSXCANCD300	21.700/ 47.840

#### Connection accessories (1)

Description	Item no.	Use	Reference	Weight kg/lb
<b>CANopen line terminator for RJ 45 connector</b> 120 Ω	4	Lexium28	TCSCAR013M120	0.009/ 0.020
<b>IP 20 CANopen connectors</b> 9-way female SUB-D Line end adapter switch Right-angle	5	M251 logic controller	TSXCANKCDF90T	0.046/ 0.101
		APC or a diagnostic tool	TSXCANKCDF90TP	0.051/ 0.112

(1) For other CANopen fieldbus connection accessories, please consult our web site: [www.schneider-electric.com](http://www.schneider-electric.com)

(2) Harsh environment:

- Resistance to hydrocarbons, industrial oils, detergents, solder splashes
- Relative humidity up to 100%
- Saline atmosphere
- Significant temperature variations
- Operating temperature between - 10 °C/+ 14 °F and + 70 °C/+ 158 °F

Example of architectures with control by Modicon M241/M251 logic controllers or LMC058 motion controller

### Options: braking resistors for servo drives

#### Presentation

##### Internal braking resistor

A braking resistor is built into the servo drive to absorb the braking energy. If the DC-bus voltage in the servo drive exceeds a specified value, this braking resistor is activated. The restored energy is converted into heat by the braking resistor. It enables maximum transient braking torque.

##### External braking resistor

When the servo motor has to be braked frequently, an external braking resistor is required to dissipate the excess braking energy. In this case, the internal braking resistor must be deactivated.

Several external braking resistors can be connected in parallel. The servo drive monitors the power dissipated in the braking resistor.

The casing degree of protection is IP 65 for VW3A7601R●● to VW3A7607R●● braking resistors and IP 20 for VW3A770● braking resistors.

The operating temperature around the unit can be between 0 and + 50 °C (+ 32 and + 122 °F).

To optimize the size of the braking resistor, the DC-buses on Lexium 28 servo drives in the same installation can be connected in parallel.

#### Applications:

Machines with high inertia, driving loads, and machines with fast cycles.



VW3A760●R●●



VW3A770●

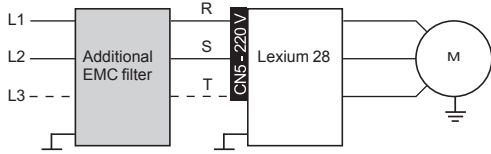
#### References

##### External braking resistor

Ohmic value Ω	Continuous power		Peak energy 230 V Ws	Length of connection cable		Reference	Weight kg/lb
	W	hp		m	ft		
10	400	0.53	13,300	0.75	2.46	VW3A7601R07	1.420/ 3.131
				2	6.56	VW3A7601R20	1.470/ 3.241
				3	9.84	VW3A7601R30	1.620/ 3.571
10	1,000	1.34	36,500	–	–	VW3A7705	11.000/ 24.251
15	1,000	1.34	43,100	–	–	VW3A7704	11.000/ 24.251
27	100	0.13	3,800	0.75	2.46	VW3A7602R07	0.630/ 1.389
				2	6.56	VW3A7602R20	0.780/ 1.720
				3	9.84	VW3A7602R30	0.900/ 1.984
	200	0.26	7,400	0.75	2.46	VW3A7603R07	0.930/ 2.050
				2	6.56	VW3A7603R20	1.080/ 2.381
				3	9.84	VW3A7603R30	1.200/ 2.646
400	0.53	18,100	0.75	2.46	VW3A7604R07	1.420/ 3.131	
			2	6.56	VW3A7604R20	1.470/ 3.241	
			3	9.84	VW3A7604R30	1.620/ 3.571	
72	200	0.26	9,600	0.75	2.46	VW3A7606R07	0.930/ 2.050
				2	6.56	VW3A7606R20	1.080/ 2.381
				3	9.84	VW3A7606R30	1.200/ 2.646
	400	0.53	24,700	0.75	2.46	VW3A7607R07	1.420/ 3.131
				2	6.56	VW3A7607R20	1.470/ 3.241
				3	9.84	VW3A7607R30	1.620/ 3.571

**Note:** The total continuous power dissipated in the external braking resistor(s) must be less than or equal to the nominal power of the Lexium 28 servo drive.

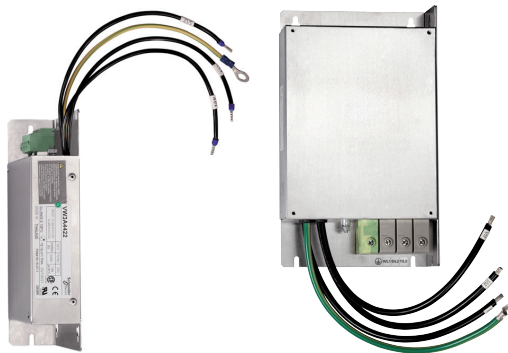




Lexium 28 servo drive with additional EMC filter



VW3A4420 EMC filter and Lexium 28 servo drive



VW3A4422

VW3A4424

### Additional EMC input filters for servo drives

#### Presentation

Lexium 28 servo drives require external input filters to comply with the EMC standard for variable speed electrical power drive "products" IEC/EN 61800-3, edition 2, category C3 in environment 2, and to comply with the European directive on EMC (electromagnetic compatibility).

#### Applications

Additional EMC filters are mounted next to the device. They have tapped holes for mounting in an enclosure.

The maximum servo motor cable length conforming to IEC/EN 61800-3 category C3 (1) in environment 2 is 20 m (65.62 ft).

#### Use according to the type of line supply

Integrated or additional EMC filters can only be used on TN (neutral connection) or TT (neutral to ground) systems.

Lexium 28 servo drives cannot be used on IT (impedance grounded or isolated neutral) systems. Standard IEC/EN 61800-3, appendix D2.1, states that on IT systems, filters can cause permanent insulation monitors to operate in a random manner.

If a machine has to be installed on an IT system, an isolation transformer must be inserted in order to re-create a TT system on the secondary side.

#### References

Designation	Max. nominal power Combination	Line current (A)	Reference	Weight kg/lb
<b>Single-phase supply voltage</b>				
<b>Additional EMC input filters for Lexium 28 servo drives</b>	<b>50 W to 750 W (0.067 to 1.00 hp) servo drives</b> 1x EMC filter and a single Lexium 28 servo drive	9	<b>VW3A4420</b>	0.600/ 1.323
	<b>1 kW and 1.5 kW (1.34 hp and 2.01 hp) servo drives</b> 1x EMC filter and a single Lexium 28 servo drive	16	<b>VW3A4421</b>	0.775/ 1.709
	<b>7.5 kW max (10.05 hp max) servo drives</b> 1x common EMC filter and several Lexium 28 servo drives	24	<b>VW3A4426</b>	1.130/ 2.491
<b>Three-phase supply voltage</b>				
<b>Additional EMC input filters for Lexium 28 servo drives</b>	<b>50 W to 1.5 kW (0.067 hp to 2.01 hp), 2kW (2.68 hp), and 3kW (4.02 hp) servo drives</b> 1x EMC filter and a single Lexium 28 servo drive	15	<b>VW3A4422</b>	0.900/ 1.984
	<b>4.5 kW (6.03 hp) servo drives</b> 1x EMC filter and a single Lexium 28 servo drive	25	<b>VW3A4423</b>	1.350/ 2.976
	<b>Up to 10 kW (up to 13.40 hp) servo drives</b> 1x common EMC filter and several Lexium 28 servo drives	47	<b>VW3A4424</b>	3.150/ 6.945

(1) Standard IEC/EN 61800-3: EMC immunity and conducted and radiated EMC emissions:  
- Category C3 in environment 2: industrial premises.

# Lexium 28 motion control

## Motor starters

### Protection using fuses



GV2P●●

+



LC1●●●

+



LXM28AU●●M3X

#### Motor starters

##### Presentation

The combinations listed below can be used to create a complete motor starter unit comprising a circuit breaker, a contactor, and a Lexium 28 servo drive.

- GV2P circuit-breaker provides protection against accidental short-circuits, disconnection and, if necessary, isolation.
- LC1 contactor turns on and manages any safety functions, as well as isolating the servo motor on stopping.
- Lexium 28 servo drive controls the servo motor, provides protection against short-circuits between the servo drive and the servo motor, and protects the motor cable against overloads. Overload protection is provided by the servo drive's motor thermal protection.

##### Combinations

Servo drive Reference	Nominal power		Mains number of phases	Circuit-breaker (1)		Contactor
				Reference	Rating	Reference (2) (3)
Mains supply voltage: 200...240 V ~ 50/60Hz						
LXM28AUA5M3X	0.05	0.067	1 or 3 phases	GV2P14	10	LC1K0610●●
LXM28AU01M3X	0.1	0.13	1 or 3 phases	GV2P14	10	LC1K0610●●
LXM28AU02M3X	0.2	0.26	1 or 3 phases	GV2P14	10	LC1K0610●●
LXM28AU04M3X	0.4	0.53	1 or 3 phases	GV2P14	10	LC1K09●●
LXM28AU07M3X	0.75	1.00	1 or 3 phases	GV2P14	10	LC1K09●●
LXM28AU10M3X	1	1.34	1 or 3 phases	GV2P14	10	LC1K12●●
LXM28AU15M3X	1.5	2.01	1 or 3 phases	GV2P16	14	LC1D18●●
LXM28AU20M3X	2	2.68	3 phases	GV2P20	18	LC1D32●●
LXM28AU30M3X	3	4.02	3 phases	GV2P20	18	LC1D32●●
LXM28AU45M3X	4.5	6.03	3 phases	GV2P21	23	LC1D65●●

(1) Circuit-breakers for single drive installation according to IEC 60364-5-52

(2) Composition of the contactors:

LC1 K06: 3 poles + 1 N/O auxiliary contact

LC1 D●●: 3 poles + 1 N/O auxiliary contact + 1 N/C auxiliary contact

(3) Replace ●● with the control circuit voltage reference given in the table below:

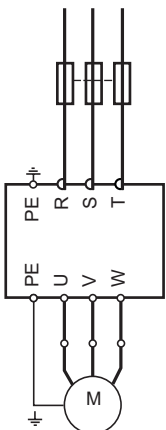
	Volts ~	220	230	240
LC1K	50/60 Hz	M7	P7	U7
	Volts ~	220/230	230	230/240
LC1D	50 Hz	M5	P5	U5
	60 Hz	M6	-	U6
	50/60 Hz	M7	P7	U7

For other available voltages between 24 V and 660 V, or a DC control circuit, please contact our Customer Care Centre.

Please refer to the "Control and protection components" catalog or consult our web site: [www.schneider-electric.com](http://www.schneider-electric.com).

##### Protection using class J fuses (UL certification)

Servo drive Reference	Nominal power (kW/hp)		Fuse to be placed upstream (A)
Mains supply voltage: 200...240 V ~ 50/60Hz			
LXM28AUA5M3X	0.05	0.067	5
LXM28AU01M3X	0.1	0.13	5
LXM28AU02M3X	0.2	0.26	5
LXM28AU04M3X	0.4	0.53	20
LXM28AU07M3X	0.75	1.00	20
LXM28AU10M3X	1	1.34	25
LXM28AU15M3X	1.5	2.01	40
LXM28AU20M3X	2	2.68	60
LXM28AU30M3X	3	4.02	80
LXM28AU45M3X	4.5	6.03	160



Lexium 28 servo drive, BCH2 servo motor with fuse protection



BCH2 with free leads connection



BCH2 servo motor with MIL connectors

### BCH2 servo motors

#### Presentation

**BCH2 motors are synchronous AC servo motors.**

- They are equipped as standard with a high resolution (20-bit) single-turn absolute encoder. They are therefore ideal for high performance applications such as material working, machine tools, etc.
- BCH2 motors are available in six flange sizes: 40 mm (1.58 in.), 60 mm (2.36 in.), 80 mm (3.15 in.), 100 mm (3.94 in.), 130 mm (5.12 in.), and 180 mm (7.08 in.).
- Depending on flange size, the BCH2 motors are supplied with:
  - free leads with connectors
  - or MIL connectors
- BCH2 motors are available with holding brake.
- With the three available types of motor inertia, ranging from low to high inertia, the servo motors can be used in a very wide variety of installations:
  - low inertia: power between 0.2 kW and 1 kW (0.26 hp and 1.34 hp), suitable for textile and packaging applications.
  - medium inertia: power between 0.05 kW and 4.5 kW (0.067 hp and 6.03 hp), suitable for material working and machine tool applications.
  - high inertia: 0.75 kW (1.00 hp) power, suitable for metal working and printing applications.

#### Examples of applications according to motor inertia type:

Type of machine	Inertia		
	Low	Medium	High
Conveyors		✓	✓
Packaging machines	✓	✓	
Printers		✓	✓
Loaders/unloaders			✓
Presses			✓
PCB drilling machines	✓		
Electronic card testers	✓		
Labelling machines	✓		
Knitting and embroidery machines		✓	✓
Special machines		✓	✓
Winders/unwinders		✓	

#### Holding brake

BCH2 servo motors can be equipped with an electromagnetic holding brake.

**⚠ Do not use the holding brake as a dynamic brake for deceleration, as this will quickly damage the brake.**

#### Integrated encoder

**BCH2 servo motors are equipped with an absolute encoder.**

This encoder performs the following functions:

- provides the absolute position of the motor so that flows can be synchronized
- measures the servo motor speed via the associated Lexium 28 servo drive (this information is used by the servo drive's position and speed controller)
- sends data from the servo motor to the servo drive, which provides automatic identification of the motor when the servo drive starts

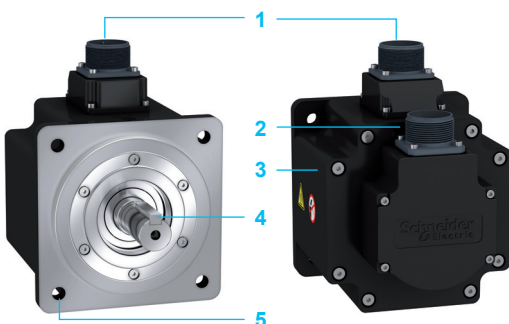
This encoder measures the motor angular position with a precision of  $\pm 2.6$  arc minutes.

#### Description

BCH2 servo motors, with a 3-phase stator and a rotor with rare earth based permanent magnets, consist of:

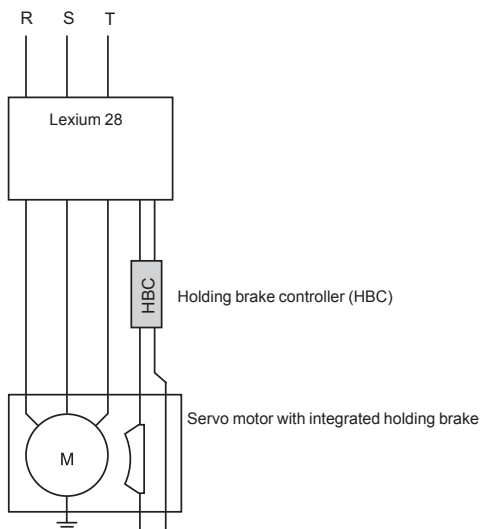
- 1 Connector for the power cable
- 2 Connector for the encoder cable
- 3 Casing with RAL 9005 opaque black paint coating
- 4 Smooth or keyed shaft end (depending on the model)
- 5 4-point axial mounting flange (Flange is mechanically compatible for mounting with Asian style servo motors).

Cables and connectors to be ordered separately, for connection to Lexium 28 servo drives. Schneider Electric has taken particular care over the compatibility of BCH2 servo motors and Lexium 28 servo drives. This compatibility is only possible when using cables and connectors sold by Schneider Electric (see page 18).



BCH2 servo motors														
References														
To order a BCH2 servo motor, make up the reference as follows:														
Brushless servo motor		B	C	H	2	•	••	•	•	C	•	•	C	
Inertia	Low inertia					L								
	Medium inertia					M								
	High inertia					H								
Flange size	40 mm (1.58 in.)						B							
	60 mm (2.36 in.)						D							
	80 mm (3.15 in.)						F							
	100 mm (3.94 in.)						H							
	130 mm (5.12 in.)						M							
	180 mm (7.08 in.)						R							
Rated output	50 W (0.067 hp)							A5						
	100 W (0.13 hp)							01						
	200 W (0.26 hp)							02						
	300 W (0.41 hp)							03						
	400 W (0.53 hp)							04						
	500 W (0.67 hp)							05						
	600 W (0.80 hp)							06						
	750 W (1.00 hp)							07						
	850 W (1.13 hp)							08						
	1 kW (1.34 hp)							10						
	1.5 kW (2.01 hp)							15						
	2 kW (2.68 hp)							20						
	3 kW (4.02 hp)							30						
3.5 kW (4.69 hp)							35							
4.5 kW (6.03 hp)							45							
Power supply ~ 220 V	1000/1500 rpm								1					
	2000 rpm								2					
	3000 rpm								3					
Winding type	Smooth shaft (shaft IP 54; housing IP 65)									0				
	Keyed shaft (shaft IP 54; housing IP 65)									1				
	Smooth shaft (shaft & housing IP 65)									2				
	Keyed shaft (shaft & housing IP 65)									3				
Encoder	High resolution single-turn absolute encoder, 20-bit resolution										C			
Holding brake	Without brake											A		
	With brake (option)											F		
Connections	Free leads with connectors (BCH2•B/•D/•F motors only)												5	
	MIL connectors (BCH2•H/•M/•R motors only)												6	
Mechanical motor design	Motor compatible with Asian style mounting standards												C	

Dimensions and weight												
Servo motor	Pn	Flange	Dimensions (overall)						Weight			
			Servo motor without brake			Servo motor with brake			without brake		with brake	
			Width x Height x Depth (W x H x D)			Width x Height x Depth (W x H x D)			kg	lb	kg	lb
	W	mm	in.	mm	in.	mm	in.					
BCH2MBA53•C•5C	50	40	1.57	40 x 58.5 x 82	1.57 x 2.30 x 3.23	40 x 58.5 x 112	1.57 x 2.30 x 4.41	0.640	1.411	0.790	1.742	
BCH2MB013•C•5C	100	40	1.57	40 x 58.5 x 100	1.57 x 2.30 x 3.94	40 x 58.5 x 130	1.57 x 2.30 x 5.12	0.780	1.720	0.930	2.050	
BCH2LD023•C•5C	200	60	2.36	60 x 78.5 x 104	2.36 x 3.09 x 4.09	60 x 78.5 x 140	2.36 x 3.09 x 5.51	1.700	3.748	2.100	4.630	
BCH2LD043•C•5C	400	60	2.36	60 x 78.5 x 129	2.36 x 3.09 x 5.08	60 x 78.5 x 165	2.36 x 3.09 x 6.50	2.100	4.630	2.500	5.512	
BCH2LF043•C•5C	400	80	3.15	80 x 98.5 x 112	3.15 x 3.88 x 4.41	80 x 98.5 x 152	3.15 x 3.88 x 4.41	2.500	5.512	3.200	7.055	
BCH2HF073•C•5C	750	80	3.15	80 x 98.5 x 138	3.15 x 3.88 x 5.43	80 x 98.5 x 178	3.15 x 3.88 x 7.01	3.500	7.716	4.200	9.259	
BCH2LF073•C•5C	750	80	3.15	80 x 98.5 x 138	3.15 x 3.88 x 5.43	80 x 98.5 x 178	3.15 x 3.88 x 7.01	3.500	7.716	4.200	9.259	
BCH2LH103•C•6C	1000	100	3.94	100 x 145.6 x 153.5	3.94 x 5.73 x 6.04	100 x 145.6 x 180.5	3.94 x 5.73 x 7.11	6.500	14.330	7.200	15.873	
BCH2LH203•C•6C	2000	100	3.94	100 x 145.6 x 198.5	3.94 x 5.73 x 7.81	100 x 145.6 x 225.5	3.94 x 5.73 x 8.88	8.500	18.739	9.200	20.283	
BCH2MM031•C•6C	300	130	5.12	130 x 175.6 x 147	5.12 x 6.91 x 5.79	130 x 175.6 x 183	5.12 x 6.91 x 7.20	7.900	17.417	9.200	20.283	
BCH2MM052•C•6C	500	130	5.12	130 x 175.6 x 147	5.12 x 6.91 x 5.79	130 x 175.6 x 183	5.12 x 6.91 x 7.20	7.900	17.417	9.200	20.283	
BCH2MM061•C•6C	600	130	5.12	130 x 175.6 x 147	5.12 x 6.91 x 5.79	130 x 175.6 x 183	5.12 x 6.91 x 7.20	8.100	17.857	9.400	20.723	
BCH2MM081•C•6C	850	130	5.12	130 x 175.6 x 187	5.12 x 6.91 x 7.36	130 x 175.6 x 216	5.12 x 6.91 x 8.50	10.000	22.046	11.500	25.353	
BCH2MM091•C•6C	900	130	5.12	130 x 175.6 x 163	5.12 x 6.91 x 6.42	130 x 175.6 x 198	5.12 x 6.91 x 7.80	8.600	18.960	9.800	21.605	
BCH2MM102•C•6C	1000	130	5.12	130 x 175.6 x 147	5.12 x 6.91 x 5.79	130 x 175.6 x 183	5.12 x 6.91 x 7.20	8.100	17.857	9.200	20.283	
BCH2MM152•C•6C	1500	130	5.12	130 x 175.6 x 167	5.12 x 6.91 x 6.57	130 x 175.6 x 202	5.12 x 6.91 x 7.95	8.600	18.960	9.400	20.723	
BCH2MM202•C•6C	2000	130	5.12	130 x 175.6 x 187	5.12 x 6.91 x 7.36	130 x 175.6 x 216	5.12 x 6.91 x 8.50	8.900	19.621	9.800	21.605	
BCH2MR202•C•6C	2000	180	7.09	180 x 245.1 x 169	7.09 x 9.65 x 6.65	180 x 245.1 x 203	7.09 x 9.65 x 7.99	15.200	33.510	19.600	43.211	
BCH2MR301•C•6C	3000	180	7.09	180 x 245.1 x 202	7.09 x 9.65 x 7.95	180 x 245.1 x 235	7.09 x 9.65 x 9.25	20.200	44.533	24.600	54.234	
BCH2MR302•C•6C	3000	180	7.09	180 x 245.1 x 202	7.09 x 9.65 x 7.95	180 x 245.1 x 235	7.09 x 9.65 x 9.25	20.200	44.533	24.600	54.234	
BCH2MR352•C•6C	3500	180	7.09	180 x 245.1 x 202	7.09 x 9.65 x 7.95	180 x 245.1 x 235	7.09 x 9.65 x 9.25	20.200	44.533	24.600	54.234	
BCH2MR451•C•6C	4500	180	7.09	180 x 245.1 x 235	7.09 x 9.65 x 9.25	180 x 245.1 x 279	7.09 x 9.65 x 10.98	25.200	55.556	29.600	65.257	



### Holding brake controller

#### Presentation

If a servo motor has a holding brake, it is necessary to give an appropriate control logic (HBC, Holding Brake Controller), which releases the brake when power is supplied to the servo motor and immobilizes the servo motor shaft when it is stationary.

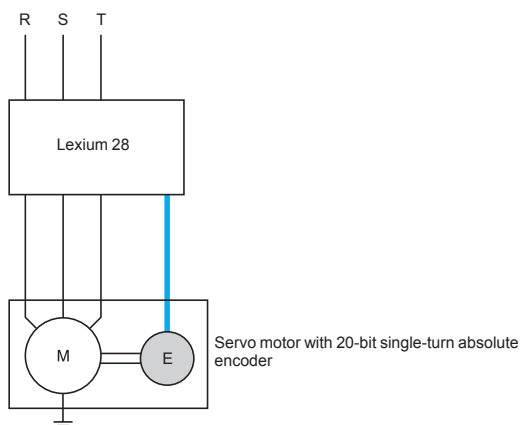
The holding brake controller amplifies the braking control signal (Digital output) transmitted by the Lexium 28 servo drive, so that the brake is deactivated quickly. It then reduces this control signal so as to decrease the power dissipated by the holding brake.



VW3M3103

#### References

Designation	Description	Reference	Weight kg/lb
Holding brake controller	<input type="checkbox"/> 24 V $\bar{\text{---}}$ power supply <input type="checkbox"/> Max. power 50 W (0.06 hp) <input type="checkbox"/> IP 20 <input type="checkbox"/> for mounting on 55 mm (2.17 in) $\bar{\text{---}}$ rail	VW3M3103	0.600/ 1.323



### Integrated encoder in BCH2 servo motors

#### Presentation

The standard measurement device is a 20-bit single-turn absolute encoder integrated in BCH2 servo motors. This measurement device is particularly suited to the Lexium 28 range of servo drives.

Use of this interface enables:

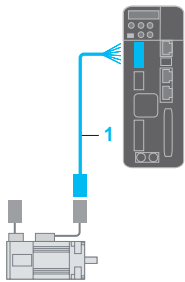
- Automatic identification of BCH2 servo motor data by the servo drive
- Automatic initialization of the servo drive control loops, thus simplifying installation and drive commissioning at the machine

# Lexium 28 motion control

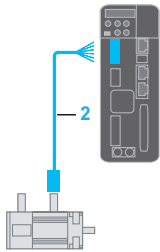
BCH2 servo motors

Connection components:

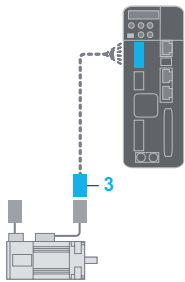
Motor power cordsets, connector kits



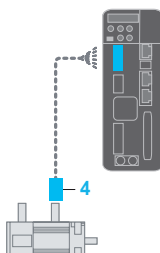
VW3M5D1●R●●



VW3M5D2●R●●  
VW3M5D4●R●●  
VW3M5D6●R●●



VW3M5D1●



VW3M5D2●

## Connection components for BCH2 servo motors

### Power cable type

Connector	AWG	mm <sup>2</sup>	Length m/ft	Reference	Weight kg/lb
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### Shielded power cordsets for BCH2 motors without brake

Equipped with one quick connector (servo motor side), and open end (servo drive side) (item 1)	AWG18	4x 0.82..1.0	1.5 / 4.92	VW3M5D1AR15	0.200/ 0.441
			3 / 9.84	VW3M5D1AR30	0.300/ 0.661
			5 / 16.40	VW3M5D1AR50	0.450/ 0.992

Equipped with one MIL connector (servo motor side), and open end (servo drive side) (item 2)	AWG16	4x 1.3..1.5	3 / 9.84	VW3M5D2AR30	0.450/ 0.992
			5 / 16.40	VW3M5D2AR50	0.700/ 1.543

	AWG12	4x 3.3..4.0	3 / 9.84	VW3M5D4AR30	0.750/ 1.653
			5 / 16.40	VW3M5D4AR50	1.250/ 2.756
	AWG10	4x 6.0	3 / 9.84	VW3M5D6AR30	2.100/ 4.630
			5 / 16.40	VW3M5D6AR50	3.400/ 7.496

### Shielded power cordsets for BCH2 motors with brake

Equipped with one quick connector (servo motor side), and open end (servo drive side) (item 1)	AWG18	6x 0.82..1.0	3 / 9.84	VW3M5D1FR30	0.300/ 0.661
			5 / 16.40	VW3M5D1FR50	0.450/ 0.992

Equipped with one MIL connector (servo motor side), and a free lead (servo drive side) (item 2)	AWG16	6x 1.3..1.5	3 / 9.84	VW3M5D2FR30	0.650/ 1.433
			5 / 16.40	VW3M5D2FR50	0.900/ 1.984

	AWG12	6x 3.3..4.0	3 / 9.84	VW3M5D4FR30	0.950/ 2.094
			5 / 16.40	VW3M5D4FR50	1.450/ 3.197
	AWG10	6x 6.0	3 / 9.84	VW3M5D6FR30	3.000/ 6.614
			5 / 16.40	VW3M5D6FR50	5.000/ 11.023

### Motor power connectors kits

Description	Use	Unit reference	Weight kg/lb
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Motor power connector kits (sold in lots of 3) (item 3)	BCH2●B/●D/●F motors (flange size: 40/60/80 mm) with free leads connection, without brake	VW3M5D1A	0.150/ 0.331
	BCH2●B/●D/●F motors (flange size: 40/60/80 mm) with free leads connection, with brake	VW3M5D1F	0.150/ 0.331

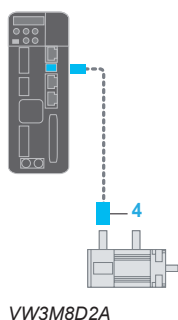
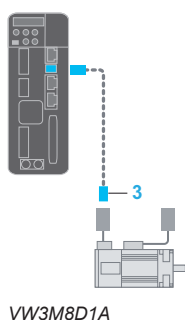
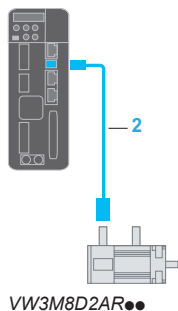
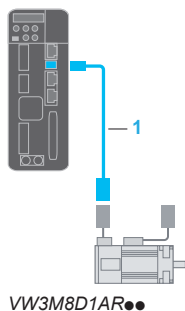
Power MIL connector kits (item 4)	BCH2●H/●M motors (flange size: 100/130 mm) with or without brake	VW3M5D2A	0.300/ 0.661
	BCH2●R motors (flange size: 180mm) with or without brake	VW3M5D2B	0.300/ 0.661

# Lexium 28 motion control

BCH2 servo motors

Connection components:

Encoder cordsets, connector kits,



## Connection components for BCH2 servo motors

Description	Use	Composition	Length m/ft	Reference	Weight kg/lb
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### Shielded encoder cordsets

Equipped with a connector at both ends (item 1)	For BCH2●B/●D/●F motors, for connection on CN2 interface	10x 0.13 mm <sup>2</sup>	1.5/4.92	VW3M8D1AR15	0.500/1.102
			3/9.84	VW3M8D1AR30	1.000/2.205
			5/16.40	VW3M8D1AR50	1.200/2.646

Equipped with one MIL connector (servo motor side), and a firewire connector (servo drive side) (item 2)	For BCH2●H/●M/●R, for connection on CN2 interface	10x 0.13 mm <sup>2</sup>	3/9.84	VW3M8D2AR30	1.300/2.866
			5/16.40	VW3M8D2AR50	1.500/3.307

### Encoder connector kits

Encoder connector kits	For BCH2●B/●D/●F motors (flange: 40/60/80 mm) with free leads connection (item 3) (sold in lots of 3)			VW3M8D1A	0.150/0.331
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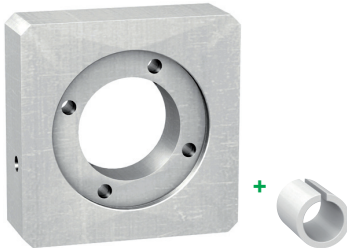
	For BCH2●H/●M/●R motors (flange: 100/130/180 mm) with MIL connector (item 4) (sold in lots of 1)			VW3M8D2A	0.150/0.331
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## Selection of motor connector kit, or encoder connector kit, according to BCH2 motor type

Motor	Motor power cable connector kit		Encoder connector kit	Motor power cable		Encoder cable
	Without brake	With brake		Without brake	With brake	
BCH2MBA53●C●5C	VW3M5D1A	VW3M5D1F	VW3M8D1A	VW3M5D1AR●●	VW3M5D1FR●●	VW3M8D1AR●●
BCH2MB013●C●5C						
BCH2LD023●C●5C						
BCH2LD043●C●5C						
BCH2LF043●C●5C						
BCH2HF073●C●5C						
BCH2LF073●C●5C						
BCH2LH103●C●6C	VW3M5D2A	VW3M5D2A	VW3M8D2A	VW3M5D2AR●●	VW3M5D2FR●●	VW3M8D2AR●●
BCH2LH203●C●6C						
BCH2MM081●C●6C						
BCH2MM031●C●6C						
BCH2MM052●C●6C						
BCH2MM061●C●6C						
BCH2MM102●C●6C						
BCH2MM091●C●6C						
BCH2MM152●C●6C						
BCH2MM202●C●6C						
BCH2MR202●C●6C						
BCH2MR301●C●6C						
BCH2MR302●C●6C						
BCH2MR352●C●6C						
BCH2MR451●C●6C						



GBX●●●●●K planetary gearbox



GBK●●●●●C adapter kit

### GBX●●●●●K planetary gearboxes

#### Presentation

Schneider Electric proposes the use of **GBX●●●●●K** planetary gearboxes with the BCH2 range of servo motors.

Motion control typically requires the use of planetary gearboxes to adapt speeds and torques, while providing the precision demanded by the application.

- The combination of **BCH2** servo motors with the most suitable **GBX●●●●●K** planetary gearboxes makes them very easy to mount and set up.
- The planetary gearboxes are designed for applications that are not susceptible to mechanical backlash. They have a keyed shaft, are lubricated for life, and conform to IP 54 degree of protection.
- Planetary gearboxes offer is available:
  - in four sizes (40 mm (1.58 in), 60 mm (2.36 in), 80 mm (3.15 in.), and 120 mm (4.72 in.)),
  - offered with ten reduction ratios (3:1, 5:1, 8:1, 10:1, 12:1, 15:1, 20:1, 25:1, 32:1, and 40:1).

The tables on next page shows the most suitable combinations of servo motor and **GBX●●●●●K** planetary gearbox.

For other combinations or any additional information about planetary gearbox characteristics, refer to the servo motor data sheets or visit our web site: [www.schneider-electric.com](http://www.schneider-electric.com).

A **GBK●●●●●C** adapter kit is available for mounting the BCH2 servo motors with GBX040●●●K to GBX120●●●K planetary gearboxes (see page 23).

The adapter kit comprises:

- an adapter plate
- a shaft end adapter, depending on the model (depends on the servo motor/ planetary gearbox combination)
- accessories for mounting the plate on the planetary gearbox
- accessories for mounting the servo motor

#### References

Size	Reduction ratio	Reference	Weight kg/lb
GBX040	3:1, 5:1 and 8:1	GBX040●●●K	0.900/ 1.984
GBX60	3:1, 5:1, 8:1 and 10:1	GBX060●●●K	2.100/ 4.630
	12:1, 15:1, 20:1, 25:1, 32:1 and 40:1	GBX060●●●K	2.600/ 5.732
GBX80	3:1, 5:1, 8:1 and 10:1	GBX080●●●K	6.000/ 13.228
	12:1, 15:1, 20:1, 25:1, 32:1 and 40:1	GBX080●●●K	8.000/ 17.637
GBX120	8:1	GBX120●●●K	18.000/ 39.683
	12:1, 15:1, 20:1, 25:1, 32:1 and 40:1	GBX120●●●K	22.000/ 48.502



# Lexium 28 motion control

## BCH2 servo motors

Option: GBX●●●●●K planetary gearboxes

GBX●●●●●K planetary gearboxes					
References					
To order a GBX040 ●●●K...GBX120●●●K planetary gearbox, complete each reference as follows:					
		GBX	●●●	●●●	K
Gearbox size	Casing diameter	40 mm (1.58 in.)	040		
		60 mm (2.36 in.)	060		
		80 mm (3.15 in.)	080		
		120 mm (4.72 in.)	120		
Reduction ratio	3:1			003	
	5:1			005	
	8:1			008	
	10:1			010	
	12:1			012	
	15:1			015	
	20:1			020	
	25:1			025	
	32:1			032	
40:1			040		
Mounting with GBK adaptation kit (see table below)					K

BCH2 servo motor and GBX gearbox combinations										
Reduction ratio from 3:1 to 40:1										
Servo motor	Reduction ratio									
	3:1	5:1	8:1	10:1	12:1	15:1	20:1	25:1	32:1	40:1
BCH2MBA53●C●5C BCH2MB013●C●5C	GBX 040	GBX 040	GBX 040	-	-	-	-	-	-	-
BCH2LD023●C●5C	GBX 060	GBX 060	GBX 060	GBX 060	GBX 060	GBX 060	GBX 060	GBX 060	GBX 060	-
BCH2LD043●C●5C	GBX 060	GBX 060	GBX 060	-	GBX 060	GBX 060	-	GBX 060	GBX 060	-
BCH2LF043●C●5C	GBX 080	GBX 080	GBX 080	GBX 080	GBX 080	GBX 080	GBX 080	GBX 080	GBX 080	GBX 080
BCH2LF073●C●5C	GBX 080	GBX 080	GBX 080	-	GBX 080	GBX 080	GBX 080	GBX 080	-	-
BCH2LH103●C●6C	GBX 080	GBX 080	GBX 080	GBX 120	GBX 080	GBX 080	GBX 080	GBX 120	GBX 120	GBX 120
BCH2LH203●C●6C	GBX 080	GBX 080	GBX 080	-	GBX 120	GBX 120	GBX 120	-	-	-
BCH2MM031●C●6C BCH2MM052●C●6C	GBX 080	GBX 080	GBX 080	GBX 080	GBX 080	GBX 080	GBX 080	GBX 120	GBX 120	GBX 120
BCH2MM061●C●6C BCH2MM102●C●6C	GBX 080	GBX 080	GBX 120	GBX 120	GBX 080	GBX 120	GBX 120	GBX 120	-	-
BCH2MM091●C●6C BCH2MM152●C●6C	GBX 080	GBX 080	GBX 120	-	GBX 120	GBX 120	-	-	-	-
BCH2MM202●C●6C	GBX 080	GBX 080	GBX 120	-	GBX 120	GBX 120	-	-	-	-

Adaptation kits for planetary gearbox						
For mounting a GBX●●●●●K planetary gearbox on a BCH2 servo motors, an adapter kit GBK●●●●●C is required.						
References						
Gearbox size	For servo motor	Gearbox external diameter (mm / in.)	Motor flange size (mm / in.)	Number of motor stacks	Reference	Weight kg/lb
Size 40	BCH2MB●●●●●●●●	40 / 1.58	40 / 1.58	1 and 2	GBK0400400C	0.140 0.31
Size 60	BCH2LD●●●●●●●●	60 / 2.36	60 / 2.36	1 and 2	GBK0600600C	0.240 0.53
Size 80	BCH2LF04●●●●●●●●	80 / 3.15	80 / 3.15	1	GBK0800801C	0.460 1.01
	BCH2LF07●●●●●●●●	80 / 3.15	80 / 3.15	2 and 3	GBK0800803C	0.440 0.97
	BCH2LH●●●●●●●●●●	80 / 3.15	100 / 3.94	1 and 2	GBK0801000C	0.900 1.98
	BCH2MM●●●●●●●●●●	80 / 3.15	130 / 5.12	1...4	GBK0801300C	1.300 2.87
Size 120	BCH2LH●●●●●●●●●●	120 / 4.72	100 / 3.94	1 and 2	GBK1201000C	0.900 1.98
	BCH2MM●●●●●●●●●●	120 / 4.72	130 / 5.12	1...4	GBK1201300C	1.350 2.98

<b>G</b>		<b>VW3A7603R20</b>	<b>14</b>	<b>VW3M3103</b>	<b>19</b>
<b>GBK0400400C</b>	<b>23</b>	<b>VW3A7603R30</b>	<b>14</b>	<b>VW3M3805R010</b>	<b>13</b>
<b>GBK0600600C</b>	<b>23</b>	<b>VW3A7604R07</b>	<b>14</b>	<b>VW3M3805R030</b>	<b>13</b>
<b>GBK0800801C</b>	<b>23</b>	<b>VW3A7604R20</b>	<b>14</b>	<b>VW3M7101R01</b>	<b>11</b>
<b>GBK0800803C</b>	<b>23</b>	<b>VW3A7604R30</b>	<b>14</b>	<b>VW3M7102R150</b>	<b>11</b>
<b>GBK0801000C</b>	<b>23</b>	<b>VW3A7606R07</b>	<b>14</b>		
<b>GBK0801300C</b>	<b>23</b>	<b>VW3A7606R20</b>	<b>14</b>		
<b>GBK1201000C</b>	<b>23</b>	<b>VW3A7606R30</b>	<b>14</b>		
<b>GBK1201300C</b>	<b>23</b>	<b>VW3A7607R07</b>	<b>14</b>		
		<b>VW3A7607R20</b>	<b>14</b>		
		<b>VW3A7607R30</b>	<b>14</b>		
		<b>VW3A7704</b>	<b>14</b>		
		<b>VW3A7705</b>	<b>14</b>		
		<b>VW3A8121</b>	<b>10</b>		
		<b>VW3A8126</b>	<b>10</b>		
		<b>VW3CANCARR1</b>	<b>13</b>		
		<b>VW3CANCARR03</b>	<b>13</b>		
		<b>VW3M1C10R10</b>	<b>11</b>		
		<b>VW3M1C10R20</b>	<b>11</b>		
		<b>VW3M1C10R30</b>	<b>11</b>		
		<b>VW3M1C12</b>	<b>11</b>		
		<b>VW3M1C13</b>	<b>11</b>		
		<b>VW3M1C20R10</b>	<b>11</b>		
		<b>VW3M1C20R20</b>	<b>11</b>		
		<b>VW3M1C20R30</b>	<b>11</b>		
		<b>VW3M4C21</b>	<b>11</b>		
		<b>VW3M4C22</b>	<b>11</b>		
		<b>VW3M5D1A</b>	<b>20</b>		
		<b>VW3M5D1AR15</b>	<b>20</b>		
		<b>VW3M5D1AR30</b>	<b>20</b>		
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The Next Generation



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