

# Motion control

## The essential guide

High performance  
motors / drives  
combination



# Motion and Drives

**The essentials**  
A simplified  
selection guide to  
help you quickly  
select your  
motion control  
products.

## The motion and drives **response**

### Lexium®

High-performance motion control

Complete offer for general **motion control**.



#### Lexium 05 servo drives from 4 A to 25 A

- Lexium 05 servo drives operate in either torque or speed control mode by means of its  $\pm 10$  V analog interface. Its encoder interface also performs the function of an electronic gearbox.



#### Lexium 15 servo drives from 1.5 to 70 A

- Multifunction servodrives for all servo motor type
- “All in one” concept:  
CANopen integrated, indexer, EMC filters, braking resistor and security functions.



#### BSH servo motors from 0.5 to 90 Nm

- Dynamic servo motors with low inertia
- Extensive speed range from 1250 to 8000 RPM
- IP40 or IP65 protection, brake, single turn or multi-turn SinCos® encoder
- Straight or angle connectors



#### BDH servo motors from 0.18 to 53 Nm

- High adaptability and compact servomotors
- Extensive speed range from 1000 to 8000 RPM
- IP54 or IP67 protection, brake, resolver, single turn or multi turn SinCos encoder
- Right angle turnable connectors

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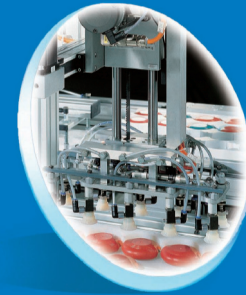
### Wide variety of control architectures:

- Fieldbus: FIPIO®, CanOpen (native), Modbus® Plus, Profibus DP
- SERCOS®: high-technology fully digital motion with Premium or processing



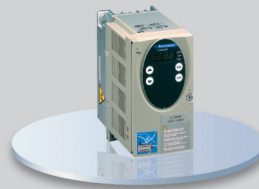
# Selection guide

## Servo drives



### ⇒ Applications:

Single axis, simple master/slave, materials handling, automatic assembly, automated inspection, coil winding, cutting to length, packaging.



### Lexium® 05

- Compactness: side by side mounting, integrated EMC class A filters.
- Simplicity: simple setting-up, "Simply start" menu
- Safety: "Power removal" function
- Openness: CANopen or Profibus DP integrated
- Intelligence: 4 operating modes, including integrated point to point positioning.

### ⇒ Applications:

Single axis, simple master/slave, advance master/slave, coordinated axes, materials handling, automatic assembly, coil winding, cutting to length, tension control.



### Lexium® 15

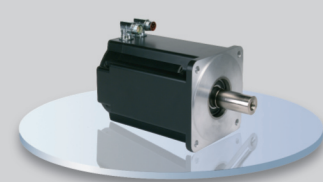
- Compactness: integrated EMC filters and braking resistors
- Simplicity: simple setting-up, "Simply start" menu
- Safety: "Power removal" function
- Openness: CANopen integrated
- Absolute positioning control
- Intelligence: Up to 200 programmable motion tasks, 8 operating modes, including integrated point to point positioning.

Supply voltage ranges, 50/60 Hz	Single-phase 100/120 V Single-phase 200/240 V 3-phase 200/240 V 3-phase 380/480 V	Single-phase 200/240 V 3-phase 200/240 V 3-phase 208/480 V
<b>Input voltage</b>	24 V, <to 1 A	24...28 or 20...30 V, 1 or 2.5 A
<b>Output voltage</b>	Maximum 3-phase voltage equal to line supply voltage	
<b>Electrical isolation</b>	Between power and control sections (inputs, outputs, power supplies)	
<b>Protection</b>	"Power Removal" safety function	
<b>Number of inputs/outputs:</b>		
Analog inputs/outputs	2 / –	2 / –
Logic inputs/outputs	4 /2	5 /2
Safety inputs	2	1
Relay outputs	–	1
<b>Drive characteristics:</b>		
Switching frequency	4 or 8 kHz	8 kHz
<b>Control loop characteristics:</b>		
Torque, Speed, Position	62.5µs, 250µs, 250µs	62.5µs, 250µs, 250µs
<b>Control signals</b>		
Resolver feedback	–	1
Motor encoder feedback signals	1	1
Pulse/direction, A/B encoder signals	1	1
Simulated encoder output signals	1	1
<b>Communication</b>		
integrated	CANopen, Profibus DP or Modbus	CANopen
option	–	Profibus DP, Modbus Plus, FIPIO, Sercos, Ethernet
<b>Option cards</b>	–	Input/output extension cards
<b>Standards and certifications</b> IEC/EN 61800-5-1, IEC/EN 50178, IEC/EN 61800-3	EN 50178, EN 61800-3, environments 1 and 2, environments 1 and 2 categories C2 and C3 EN 55011 class A group 1 and 2, (73/23/CEE	categories C2 and C3, (73/23/CEE) and CEM (89/336/CEE) UL, cUL (Canada)



## BSH motors

- Wide range
- High dynamics
- Compactness: new salient pole based winding technology.
- Automatic motor identification and high precision positioning provided by SinCos Hiperface encoder



## BDH motors

- Wide range: more than 68 types of motor.
- Excellent adaptability:
  - Degree of protection IP54 or IP67
  - With or without brake
  - Straight or right-angled connectors
  - Smooth shaft or with key
- Compactness: new salient pole based winding technology.
- Absolute positioning control provided by SinCos Hiperface encoder

Flange size (mm)	55, 70, 100, 140, 205	40, 58, 70, 84, 108, 138, 188
Nominal speed (RPM)	500 to 8000	500 to 8000
Nominal torque (Nm)	0.41 to 80	0.17 to 48
Maximum rotational speed (RPM)	3800 to 8000	6000 to 8000
Continuous stall torque (Nm)	0.5 to 90	0.18 to 53
Peak stall torque (Nm)	1.4 to 300	0.61 to 108
Type of mounting	IEC	IEC, NEMA
IP protection	IP40, IP65	IP54, IP67
Shaft end	Smooth Smooth With closed shaft key (IEC standard)	With closed shaft key (IEC standard) With open shaft key (NEMA standard)
Holding brake	Option Option	
Integrated sensor	Single turn SinCos Hiperface encoder Multiturn SinCos Hiperface encoder	Resolver Single turn SinCos Hiperface encoder Multiturn SinCos Hiperface encoder
Connector type	IP65 Straight Elbowed	IP65 Elbowed
Magnet type	Neodymium Iron Boron (NdFeB)	Neodymium Iron Boron (NdFeB)
Standards	Operating characteristics, robustness, safety, ..., conforming to IEC/EN 60034-1	
Certifications	European directives UL1004	
Altitude	Altitude: 1000 m without derating, 2 000 m with k = 0.86 (1), 3000 m with k = 0.8	1000 m without derating, 2000 m with k = 0.94 (1), 3000 m with k = 0.83
Operational temperature	Ambient operating temperature: - 20...40 °C conforming to DIN 50019R14. Maximum 55 °C with derating above 40 °C by 1% per additional °C	5...40 °C conforming to EN 50178 Climatic class 3K3. Maximum 50 °C with derating above 40 °C by 1% per additional °C
Relative humidity	Class F conforming to DIN 400 Climatic class 3K3	95% without condensation conforming to EN 50178
Nominal life of bearings	$L_{10h} = 20\ 000$ hours	$L_{10h} = 20000$ hours

(1) k: Derating factor



Module type	For translators (amplifier for stepper motor)		For analog control servo motors (for asynchronous and brushless motors)				
Control outputs	RS 422		+/- 10 V				
Compatible with servodrives	Lexium 05		Lexium 05/15				
Functions	Linear axes	–	Limited		Limited or infinite		Limited or infinite (1)
	Slave axes	–	With static ratio		With dynamic ratio		–
Frequency for each axis	187 kHz		500 kHz with incremental encoder, 200 kHz with absolute encoder (SSI serial or parallel output)				
Number of axes	1	2	2	4	2	4	3
Reference	TSXCFY11	TSXCFY21	TSXCAY21	TSXCAY41	TSXCAY22	TSXCAY42	TSXCAY33

(1) With linear interpolation on 2 or 3 axes



Module type	Servo motors with SERCOS® digital ring (for brushless motors)		
Control outputs	SERCOS® network ring		
Compatible with servodrives	Lexium 15		
Functions	Linear or infinite independent axes, slave axes with cam profile or ratio		
Processing	4 sets of axes with linear interpolation from 2 to 8 axes	4 sets of axes with linear and circular interpolation from 2 to 3 axes (2)	4 sets of axes with linear interpolation from 2 to 8 axes
Frequency for each axis	4 Mb SERCOS® network ring		
Number of axes	8 (3)	8 (3)	16 (4)
Reference	TSXCSY84	TSXCSY85	TSXCSY164

(2) TSXCSY85 module supplied with TJE trajectory editor: linear trajectories with links between segments according to polynomial or circular interpolation and circular trajectories.

(3) 8 real axes, 4 imaginary axes and 4 remote axes

(4) 16 axes (real axes, imaginary and remote axes)

## Connection accessories for Modicon® Premium™ and Quantom™ PLC modules

Type	Fiber optic cables For Lexium 15 MDHA1...N00/A00 drives	
Connection	Pre-equipped cable with SMA connectors	
Reference	L = 0.3 m	990MCO0001
	L = 0.9 m	990MCO0003
	L = 1.5 m	990MCO0005
	L = 4.5 m	990MCO0015
	L = 16.5 m	990MCO0055
	L = 22.5 m	990MCO0075
	L = 37.5 m	990MCO0125



Control and connectivity	
+ or - 10 V. Pulse / direction CANopen	Profibus DP
Torque control, speed control, point to point, gearing, homing	



Servo drive type	Digital for servo motors			
	Size 1	Size 2	Size 3	
Supply voltage	110...120 VAC single phase			
Output current (A)	Continuous (RMS)	4	8	15
	Maximum (RMS)	7	12	20
Power (kW)	0.4	0.65	0.85	
Safety function	Integrated "Power Removal"			
Braking resistor	Integrated			
EMC filter	Integrated			
Reference (1)	LXM05●D10F1	LXM05●D17F1	LXM05●D28F1	



Servo drive type	Digital for servo motors						
	Size 1	Size 2	Size 3	Size 1	Size 2	Size 3	
Supply voltage	200...240 VAC single phase			200...240 VAC 3-phase			
Output current (A)	Continuous (RMS)	4	8	15	4	8	17
	Maximum (RMS)	7	12	20	7	12	30
Power (kW)	0.75	1.2	2.5	0.75	1.4	3.2	
Safety function	Integrated "Power Removal"						
Braking resistor	Integrated						
EMC filter	Integrated			Not integrated			
Reference (1)	LXM05●D10M2	LXM05●D17M2	LXM05●D28M2	LXM05●D10M3X	LXM05●D17M3X	LXM05●D42M3X	



Servo drive type	Digital for servo motors				
	Size 2	Size 2	Size 3	Size 4	
Supply voltage	380...480 VAC 3-phase		380...480 VAC 3-phase		
Output current (A)	Continuous (RMS)	6	9	15	25
	Maximum (RMS)	10	16	24	40
Power (kW)	1.4	2	3	6	
Safety function	Integrated "Power Removal"				
Braking resistor	Integrated				
EMC filter	Integrated				
Reference (1)	LXM05●D14N4	LXM05●D22N4	LXM05●D34N4	LXM05●D57N4	

(1) To order a Lexium 05 servo drive with CANopen bus integrated, replace "●" by "A". Example LXM05●D14N4 become LXM05AD14N4.  
To order a Lexium 05 servo drive with PROFIBUS DP bus integrated, replace "●" by "B". Example LXM05●D14N4 become LXM05BD14N4.



Supply voltage			Single phase	3-phase
Maximum cable length	Category C3		40 m	40 m
	Category C2		20 m	20 m
Reference	Drives	Size 1	LXM05AD10F1, LXM05AD10M2	LXM05AD10M3X
		Filters		VW3A31401
	Drives		Size 2	LXM05AD17F1, LXM05AD17M2
		Filters		VW3A31403
Drives	Size 3		LXM05AD28F1, LXM05AD28M2	LXM05AD42M3X, LXM05AD22N4, LXM05AD34N4
	Filters		VW3A31405	VW3A31406
Drives		Size 4		LXM05AD57N4
Filters		-	VW3A31407	

## Line inductances



Supply voltage			Single phase		3-phase	
			110...120 V	200...240 V	200...240 V	380...480 V
References	Drives	Size 1	LXM05AD10F1	LXM05AD10M2	LXM05AD10M3X	-
		Inductances		VZ1L007UM50	VZ1L007UM50	VW3A4551
	Drives		Size 2	LXM05AD17F1	LXM05AD17M2	LXM05AD17M3X
		Inductances		VZ1L018UM20	VZ1L018UM20	VW3A4552
Drives	Size 3		LXM05AD28F1	LXM05AD28M2	LXM05AD42M3X	LXM05AD34N4
	Inductances		VZ1L018UM20	VZ1L018UM20	VW3A4553	VW3A4552
Drives		Size 4				LXM05AD57N4
	Inductances		-	-	-	VW3A4552

## Holding brake controller

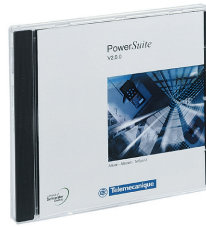
Controller type	Holding brake
Power supply	24 VDC
Maximum current	1.6 A
Maximum power	50 W
Degree of protection	IP20
Reference	VW3M3103

## External braking resistors

Resistor type			External braking for Lexium 05 drives						
Resistance			10 Ω	27 Ω			72 Ω		
Power			400 W	100 W	200 W	400 W	100 W	200 W	400 W
Reference (1)	cable length	L = 0.75 m	VW3 A7601R07	A7602R07	A7603R07	A7604R07	A7605R07	A7606R07	A7607R07
		L = 2 m	VW3 A7601R20	A7602R20	A7603R20	A7604R20	A7605R20	A7606R20	A7607R20
		L = 3 m	VW3 A7601R30	A7602R30	A7603R30	A7604R30	A7605R30	A7606R30	A7607R30

(1) In order to select the braking resistor, you need to calculate the continuous and peak power to be dissipated in it. Please consult our Lexium 05 catalog



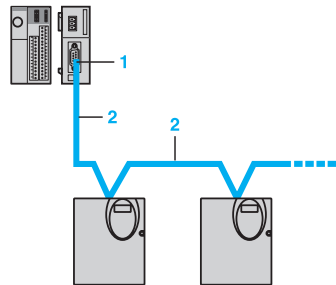


Multilingual configuration software		For PC
Configuration of drives and softstarters		Lexium® 05 / Altivar® / Altistart®
Environment		Microsoft Windows
Languages		English - French - German - Italian - Spanish
Reference	PowerSuite CD-ROM	(1)
	Connection kit	<b>VW3A8106</b>

(1) A dedicated PowerSuite software for Lexium is delivered with each servodrive.

## CANopen communication bus connection

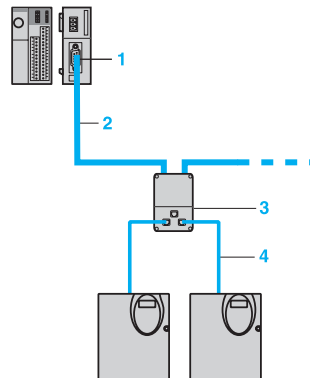
Twido® PLC



- 1 SUB-D connector
- 2 CANopen cable standard

Connection type	Via spring terminal (CN1)			
	Connector IP20	Cable		
Connector type	Bended at 90° SUB-D	-		
Type of cable	-	Halogen free	UL certification	For heavy duty
References	<b>TSXCANKCDF90T</b>	-	-	-
	L = 50 m	-	<b>TSXCANCA50</b>	<b>TSXCANCB50</b> <b>TSXCANCD50</b>
	L = 100 m	-	<b>TSXCANCA100</b>	<b>TSXCANCB100</b> <b>TSXCANCD100</b>
	L = 300 m	-	<b>TSXCANCA300</b>	<b>TSXCANCB300</b> <b>TSXCANCD300</b>

Twido® PLC



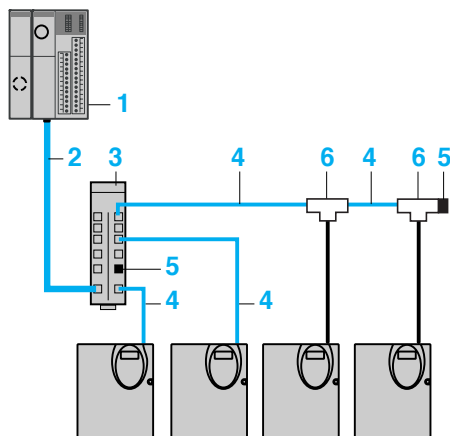
- 1 SUB-D connector
- 2 CANopen cable standard
- 3 Junction box
- 4 Cable for CANopen bus

Connection type	Via RJ45 connector	
	Junction box	Cable
Description	2 RJ45 ports	2 RJ45 connectors
References	<b>VW3CANTAP2</b>	-
	L = 0.3 m	<b>VW3CANCARR03</b>
	L = 100 m	<b>VW3CANCARR1</b>



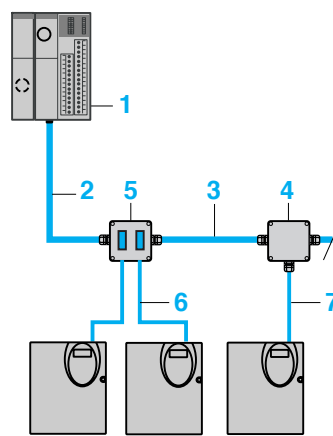
Drives		Lexium 05		
Connection type	Description	Splitter box with 10 RJ45 connectors and 1 screw terminal block	Junction box for drop cable VW3A8306D30	Subscriber socket for drop cable VW3A8306
	Reference	LU9GC3	TSXSCA50	TSXSCA62
Line terminators	For RJ 45 connector	R = 120 Ω, C = 1 nf		R = 150 Ω, C = 1 nf
	Reference	VW3A8306RC		VW3A8306R
	For screw terminals	R = 120 Ω, C = 1 nf		R = 150 Ω, C = 1 nf
	Reference	VW3A8306DRC		VW3A8306DR
T-junction boxes	With integrated cable 0.3 m	VW3A8306TF03		
	With integrated cable 1 m	VW3A8306TF10		
Cables	Description	2 RJ 45 connectors		
	Reference	0.3 m	VW3A8306R03	
		1 m	VW3A8306R10	
		3 m	VW3A8306R30	
RS 485 shielded twisted double pair cables	Description	1 RJ45 connector and one stripped end		
	Reference	3 m	VW3A8306D30	
	Description	Supplied without connector		
	Reference	100 m	TSXCSA100	
		200 m	TSXCSA200	
	500 m	TSXCSA500		

Connection with RJ45 splitter box and screw terminals



- 1 Twido® Controller
- 2 Cable for controller Twido serial link
- 3 Modbus splitter box LU9 GC3
- 4 Modbus drop cables VW3 A8 306R●●
- 5 Line terminators VW3 A8 306RC
- 6 Modbus T-junction boxes VW3 A8 306TF●● (with cable)

Connection with junction box or subscriber sockets



- 1 Twido® Controller
- 2 Cable for controller Twido serial link
- 3 Modbus cables TSX CSA●00
- 4 T-junction box TSX SCA 50
- 5 Subscriber socket TSX SCA 62
- 6 Modbus drop cables VW3 A8 306
- 7 Modbus drop cables VW3 A8 306 D30

Connection via screw terminals

In this case, a Modbus drop cable (VW3 A8 306D30) and line terminators (VW3 A8 306DRC) are used.



BSH servo motors		Lexium 05 servo drives				Lexium 05 servo drives			
Reference	Torque at standstill	Nominal speed (RPM)	110/120 V single phase, with integrated EMC filter LXM 05●			Nominal speed (RPM)	200/240 V single phase, with integrated EMC filter LXM 05●		
			D10F1 0.4 kW	D17F1 0.65 kW	D28F1 1.4 kW		D10M2 0.75 kW	D17M2 1.2 kW	D28M2 2.5 kW
BSH 0551T	0.5 Nm	3000	1.4 Nm			6000	1.4 Nm		
BSH 0552M	0.9 Nm					1500	2.3 Nm		
BSH 0552P	0.9 Nm					4000	2.7 Nm		
BSH 0552T	0.9 Nm	3000	1.77 Nm	2.7 Nm		6000	1.77 Nm		
BSH 0553M	1.3 Nm					1500	4.2 Nm		
BSH 0553P	1.3 Nm					4000	3.18 Nm		
BSH 0553T	1.3 Nm	3000		3.31 Nm		6000		3.31 Nm	
BSH 0701P	1.4 Nm					3000	3.2 Nm		
BSH 0701T	1.4 Nm	2500	2.42 Nm			5000		3.19 Nm	
BSH 0702M	2.1 Nm					1500	6.8 Nm		
BSH 0702P	2.2 Nm					3000	5.37 Nm	7.55 Nm	
BSH 0702T	2.12 Nm	2500		4.14 Nm		6000		4.14 Nm	6.8 Nm
BSH 0703M	2.8 Nm					1500	10 Nm		
BSH 0703P	3.1 Nm					3000		7.28 Nm	10.3 Nm
BSH 0703T	2.8 Nm	2500			7.38 Nm	6000			7.38 Nm
BSH 1001T	3.4 Nm	2500			8.5 Nm	4000			8.5 Nm
BSH 1002P	5.8 Nm					2000			18.3 Nm
BSH 1003P	7.8 Nm					2000			22.79 Nm

Reference	Torque at standstill	Nominal speed (RPM)	200/240 V three phase, without integrated EMC filter LXM 05●			Nominal speed (RPM)	380/480 V three phase, with integrated EMC filter LXM 05●			
			D10M3X 0.75 kW	D17M3X 1.4 kW	D42M3X 3.2 kW		D14N4 1.4 kW	D22N4 2 kW	D34N4 3 kW	D57N4 6 kW
BSH 0551T	0.5 Nm	6000	1.4 Nm							
BSH 0552M	0.9 Nm	1500	2.3 Nm							
BSH 0552P	0.9 Nm	4000	2.7 Nm			6000	2.7 Nm			
BSH 0552T	0.9 Nm	6000	1.77 Nm							
BSH 0553M	1.3 Nm	1500	4.2 Nm							
BSH 0553P	1.3 Nm	4000	3.18 Nm			6000	3.87 Nm			
BSH 0553T	1.3 Nm	6000		3.31 Nm						
BSH 0701M	1.4 Nm	1500	3.2 Nm							
BSH 0701P	1.4 Nm	3000	3.2 Nm							
BSH 0701T	1.4 Nm	6000	2.41 Nm	3.19 Nm						
BSH 0702M	2.1 Nm	1500	6.8 Nm							
BSH 0702P	2.2 Nm	3000	5.37 Nm	7.55 Nm		6000	7.55 Nm			
BSH 0702T	2.12 Nm	4500			6.8 Nm					
BSH 0703M	2.8 Nm	1500	10 Nm			3000	10.3 Nm			
BSH 0703P	3.1 Nm	3000		7.28 Nm		6000		8.92 Nm		
BSH 0703T	2.8 Nm	6000			10.25 Nm					
BSH 1001M	3.4 Nm					2000	8.5 Nm			
BSH 1001P	3.3 Nm	2000		9.45 Nm		4000		9.45 Nm		
BSH 1001T	3.4 Nm	4000			8.5 Nm					
BSH 1002M	5.5 Nm					2000	16 Nm			
BSH 1002P	5.8 Nm	2000		12.35 Nm		4000		15.43 Nm		
BSH 1002T	5.52 Nm	4000			16 Nm					
BSH 1003M	7.8 Nm					2000		27.8 Nm		
BSH 1003P	8 Nm	2000			28.3 Nm	4000			26.97 Nm	
BSH 1004P	10 Nm	1500			35.7 Nm	3000			22.53 Nm	30.41 Nm
BSH 1401P	11.1 Nm				30.41 Nm	2500			26.2 Nm	
BSH 1401T	11.1 Nm	2500			27.1 Nm					
BSH 1402M	19.5 Nm					1250			57.1 Nm	
BSH 1402P	19.5 Nm	1500			46.42 Nm	3000			38.6 Nm	57.42 Nm
BSH 1402T	14.73 Nm	2000			25.04 Nm					
BSH 1403M	27.8 Nm					1500			76.66 Nm	88.17 Nm
BSH 1403P	27.8 Nm					3000				57.24 Nm
BSH 1404M	33.4 Nm					1500				126.45 Nm
BSH 1404P	33.4 Nm					3000				60.04 Nm
BSH 2051M	36 Nm					1500				68.3 Nm

1.4 Nm This value corresponds to the peak torque at standstill that can be provided by the Lexium 05 servo drive/BSH servo motor combination.

Availability of BSH 055 and BSH 205 servo motors: 1<sup>st</sup> quarter 2006.  
● replaced by A for the CANopen/analog inputs version, replaced by B for the Profibus DP version.



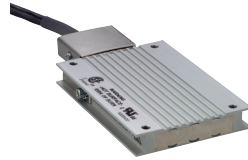
Servo drive type		Lexium 15 LP					
Supply voltage		3-phase 200...240 V, 50/60 Hz Available in 1-phase with derating			3-phase 208...480 V, 50/60 Hz Available in 1-phase with derating		
Output current (A)	Continuous	3 A	6 A	10 A	1,5 A	3 A	6 A
	Maximum (discontinuous, 2 s)	13 A	21 A	28 A	6 A	10 A	17 A
Powers (kW)		1	2.1	3.4	1.1	2.1	4.3
Security function		Power removal integrated					
Braking resistor		Integrated					
EMC filters class A		Integrated					
Line reactors		Integrated					
References		LXM15LD13M3	LXM15LD21M3	LXM15LD28M3	LXM15LU60N4	LXM15LD10N4	LXM15LD17N4



Servo drive type		Lexium 15 MP		
Supply voltage		3-phase 208...480 V, 50/60 Hz 200-240 V, 50/60 Hz		
Output current (A)	Continuous	10 A	14 A	20 A
	Maximum (discontinuous, 2 s)	28 A	40 A	56 A
Powers (kW)		5.7	7.9	11.4
Security function		Power removal integrated		
Braking resistor		Integrated		
EMC filters class A		Integrated		
Line reactors		Integrated		
References		LXM15MD28N4	LXM15MD40N4	LXMMD56N4



Servo drive type		Lexium 15 HP	
Supply voltage		3-phase 208...480 V, 50/60 Hz	
Output current (A)	Continuous	40 A	70 A
	Maximum (discontinuous, 2 s)	80 A	140 A
Powers (kW)		22.3	42.5
Security function		Power removal integrated	
Braking resistor		Option, requires in neutral mode TT and TN	
EMC filters class A		Option	
Line reactors		Option, requires in neutral mode TT and TN	
References		LXM15HC11N4X	LXM15HC20N4X



Resistor type	External braking for Lexium 15 servo drives			
Continuous power PPr (W)	100	200	400	1000
Reference				
5 Ω	–	–	–	VW3A7707
10 Ω	–	–	VW3A7601R● (1)	VW3A7705
27 Ω	VW3A7602R● (1)	VW3A7603R● (1)	VW3A7604R● (1)	–
72 Ω	VW3A7605R● (1)	VW3A7606R● (1)	VW3A7607R● (1)	–
100 Ω	VW3A7608R● (1)	–	–	–

(1) For a length of connection cable of 0.75 m replace ● by 07  
 2 m replace ● by 20  
 3 m replace ● by 30

## Additional EMC input filters



Supply voltage	3-phase 208...480 VAC	
Type of Lexium 15 HP servo drive	LXM15HC11N4X	LXM15HC20N4X
Input rms current (A)	42	75
Maximum motor cable length	100 m	100 m
References	VW3M4101	VW3M4102

## Line reactors



Supply voltage	3-phase 208...480 VAC	
Type of Lexium 15 HP servo drive	LXM15HC11N4X	LXM15HC20N4X
Input current (A)	60	75
References (1)	VW3M4301	VW3M4302

(1) Must be ordered with the drive, unless an isolation transformer is being used with IT connection

## Motor reactor

Supply voltage	3-phase 208...480 VAC			
Type of Lexium 15 HP servo drive	LXM15LD13M3 LXM15LD21M3 LXM15L...N4	LXM15LD28M3 LXM15MD28N4	LXM15MD40N4	LXM15MD56N4
Input nominal current (A)	6	10	14	20
References	VW3M5301	VW3M5302	VW3M5303	VW3M5304

Control and connectivity	
+ ou -10 V. Pulse / direction	Profibus DP / FIPIO Modbus Plus / Ethernet
CANopen	Sercos
Torque control loop, speed control loop, position control loop,	

Accessories type	Backup key
Use	Saves the servo drive operating parameters and instantly reinitiates settings (without PC)
References	VW3 M8 701

Accessories type	Master / Slave cable	Cable for PC serial port
Connector type	2 SUB-D connectors female 9 pins	
References	L = 0.5 m VW3 M8 501 R05	
	L = 2 m VW3 M8 501 R20	
	L = 3 m -	VW3 M8 501 R30
	L = 6 m VW3 M8 501 R60	

### Inputs/outputs extension card

Card type	Card AM0 INE 001V000
Number of logic inputs	10
Number of logic outputs	8

### Communication bus connection CANopen

Connection type	Integrated Connector	Card AM02CA001V000			
		Connector	Cable		
Connector type	1 SUB-D male 9 pins	2 SUB-D male 9 pins 1 SUB-D female 9 pins	-	-	-
Cable type	-	-	Halogen-free	UL certification	Harsh environments
References	L = 50 m	-	TSXCANCA50	TSXCANCB50	TSXCANCD50
	L = 100 m	-	TSXCANCA100	TSXCANCB100	TSXCANCD100
	L = 300 m	-	TSXCANCA300	TSXCANCB300	TSXCANCD300

### FIPIO® card



Connection type	Card AM0 FIP 001V000	Connector	
		Connector	Cable
Connector type	SUB-D male 9 pins	-	-
Cable type	-	Standard environment	Harsh environments
References	L = 100 m	TSX FP CA 100	TSX FP CR 100
	L = 200 m	TSX FP CA 200	TSX FP CR 200
	L = 500 m	TSX FP CA 500	TSX FP CR 500

## Modbus® Plus card

Connection type		Card AM0 MBP 001V000	
		Connector	Cable
Connector type		SUB-D female 9 pins	–
References	L = 30.5 m	–	490 NAA 271 01
	L = 152.5 m	–	490 NAA 271 02
	L = 305 m	–	490 NAA 271 03
	L = 457 m	–	490 NAA 271 04
	L = 1525 m	–	490 NAA 271 06

## Profibus DP card



Connection type		Card DP VW3 M3 306	
		Connector	Cable
Connector type		2 SUB-D female 9 pins	–
References	L = 100 m	–	TSX PBS CA 100
	L = 400 m	–	TSX PBS CA 400

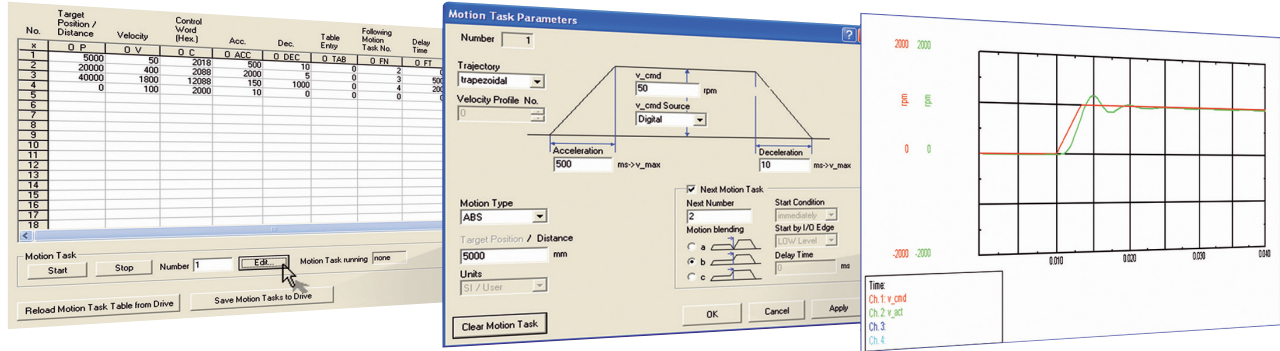
## Ethernet card

Connection type		Card AM0 ETH 001V000	
		Connector	Cable
Connector type		2 RJ45 connectors	–
Cable type		–	straight crossover
References	L = 2 m	–	490 NTW 000 02
	L = 5 m	–	490 NTW 000 05
	L = 12 m	–	490 NTW 000 12
	L = 15 m	–	–
	L = 40 m	–	490 NTW 000 40
	L = 80 m	–	490 NTW 000 80

## Sercos® card



Connection type		Card AM0 SER 001V000	
		Connector	Cable
Connector type		SMA	–
Fiber optic references	L = 0.3 m	–	990 MCO 000 01
	L = 0.9 m	–	990 MCO 000 03
	L = 1.5 m	–	990 MCO 000 05
	L = 4.5 m	–	991 MCO 000 15
	L = 16.5 m	–	991 MCO 000 55
	L = 22.5 m	–	991 MCO 000 75
	L = 37.5 m	–	992 MCO 001 25



Unilink software for PC is a tool for configuring Lexium 15 servo drive operating parameters.

Its simple, easy-to-follow graphic interface helps to reduce setup costs.

It incorporates various functions for the setup phases, such as:

- Parameter setting
- Advanced adjustment of the various control loops
- Programming motion tasks
- Supervision

This software is available in two versions, for configuring Lexium 15 LP servo drives (Unilink L) and Lexium 15 MP/15 HP servo drives (Unilink MH).

It is supplied with the servo drive as standard.

Configuration and adjustment software	«Unilink™» for PC
Drives configuration	Lexium 15
Environment	Microsoft Windows
Language	English, French, German, Italian and Spanish
Contents	CD- Rom deliver with the product : Unilink software + documentation (1)

(1) All the documentation on [www.telemecanique.com](http://www.telemecanique.com)





Servo drive type			Lexium 15 LP						Lexium 15 MP			Lexium 15	
MP			With EMC filters integrated										
			200...240V/1-phase and 3-phase			208...480 V 3-phase			208...480V/3-phase			208...480V/3-phase	
			LXM15L						LXM15M			LXM15H	
BSH...	Mo (1)	Nmax (2)	D13M3	D21M3	D28M3	U60N4	D10N4	D17N4	D28N4	D40N4	D56N4	C11N4X	C20N4X
0551 P	0.5	6880	1.4			1.4							
0551 T	0.5	8000	1.4										
0552 M	0.9	6160				2.25							
0552 P	0.9	8000	2.54										
0552 T	0.9	5920	2.7			2.26							
0553 M	1.3	4880				3.5							
0553 P	1.3	5680	4.2				3.87						
0701 P	1.41	8000	2.66	3.19		2.66							
0701 T	1.36	4880	3.19				2.91						
0702 M	2.12	4960				5.63							
0702 P	2.12	8000	5.63				4.85						
0702 T	2.12	8000		5.45				4.47					
0703 P	2.83	8000		9.28				7.71					
0703 T	2.83	8000			7.38								
1001 P	3.39	3780		7.68			6.19						
1001 T	3.39	6000			8.5								
1002 P	5.52	6000		14.79				12.13					
1002 T	5.52	5340			11.59								
1003 M	7.76	2640					23	22.95					
1003 P	7.76	6000			19.69				19.7	23.17			
1004 M	9.31	2400					29.9	29.87		33.83			
1004 P	9.31	4800							23.6	33.83			
1004 T	9.31	4080								21.04			
1401 M	11.4	2360							26				
1401 P	11.4	4000							23.3	23.33			
1401 T	11.4	3920								22.27	23.33		
1402 M	19.2	2360								47.5			
1402 P	19.2	4000								39.33	47.5		
1403 M	25.4	2200								71.67			
1403 P	25.4	4000									57.2		
1404 M	32.1	2040								82.32	95		
2051 M	36	2200								68.33	68.33	68.33	
2051 P	36	3500										82	
2051 T	36	3724										69.95	82
2052 M	65	2190										200	200
2052 P	65	3000										118.54	193.45
2053 M	90	2190										227.18	300
2053 P	90	3000											202.96

(1) Mo = Nominal torque in Nm

(2) N max = maximum speed in RPM

1.4 = Value in Nm corresponding to the peak stall torque of servodrive-motor combination



Servo drive type			Lexium 15 LP						Lexium 15 MP		
			With EMC filters integrated								
			200...240V/1-phase and 3-phase			208...480V/3-phase			208...480V/3-phase		
			LXM15L						LXM15M		
BDH...	Mo (1)	Nmax (2)	D13M3	D21M3	D28M3	U60N4	D10N4	D17N4	D28N4	D40N4	D56N4
0401 B	0.18	8000	0.61								
0402 C	0.31	8000	1.08								
0403 C	0.41	8000	1.46								
0582 C	0.84	8000				2.34					
0582 E	0.87	8000	2.42								
0583 C	1.13	8000				3.2					
0583 D	1.16	6540	3.84				3.42				
0583 F	1.18	8000		3.52							
0584 C	1.38	8000				3.94					
0584 D	1.41	5420	4.76				4.22				
0584 F	1.42	8000		4.68							
0701 C	1.15	8000				3.34					
0701 E	1.2	8000	3.24								
0702 C	2	8000				5.74					
0702 D	2.04	3750	7.05				6.18				
0702 H	2.1	8000		5.36							
0703 C	2.71	8000				7.83					
0703 E	2.79	3140	8.95				7.7				
0703 H	2.88	6630		7.35							
0841 C	1.95	6630				5.12					
0841 E	2.02	6630	5.33				4.64				
0841 H	2.06	6630		4.78							
0842 C	3.35	6630				9.37					
0842 E	3.42	6630	9.72				8.41				
0842 G	3.53	6630		9.56				7.99			
0842 J	3.56	6630			7.75				7.75		
0843 E	4.7	6630					11.7				
0843 G	4.8	6630		13.2				10.9			
0843 K	4.9	6630			9.66				9.66		
0844 E	5.76	6630					14.1				
0844 G	5.88	6630		16.1				13.3			
0844 J	6	6630			12.9				12.9		
1081 E	4.7	4010					10.9				
1081 G	4.75	6000		11.7				10.2			
1081 K	4.9	6000			9.22				9.22		
1082 E	8.34	2470					18.5				
1082 G	8.43	3840		21.5				18.9			
1082 K	8.6	3840			16.9				16.9		
1082 M	8.6	3000								16.7	
1083 G	11.4	2880						25.8			
1083 K	11.6	2880			22.9				22.9		
1083 M	11.4	2000								22.1	
1083 P	11.4	3000									22.2
1084 G	14.3	2390						31.7			
1084 K	14.4	4000			28.1				28.1		
1084 L	14.1	4000								29.5	
1084 N	14.1	4000									29.6
1382 G	11.9	1860						25.6			



Servo drive type			Lexium 15 LP						Lexium 15 MP		
			With EMC filters integrated								
			200...240V/1-phase and 3-phase			208...480V/3-phase			208...480V/3-phase		
			LXM15L						LXM15M		
BDH...	Mo (1)	Nmax (2)	D13M3	D21M3	D28M3	U60N4	D10N4	D17N4	D28N4	D40N4	D56N4
1382 K	12.2	4500			22.7				22.7		
1382 M	12.2	4500								22.8	
1382 P	12.3	4500									23.2
1383 G	16.5	1860						384			
1383 K	16.8	3500			31				31		
1383 M	17	3500								31.4	
1383 N	17	4500									34.8
1384 K	20.8	2500							41.2		
1384 L	21	2500								41.9	
1384 P	20.4	3500									40.2
1385 K	24.8	2200							46.8		
1385 M	25	2200								47.6	
1385 N	24.3	3000									50.2
1882 K	29.7	1800							59.4		
1882 M	30	1800								59.8	
1882 P	29.4	2500									58.4
1883 M	42	3500								80.7	
1883 P	41.6	1800									79.4
1884 L	53	2800								108	
1884 P	52.5	1400									106

(1) Mo = Nominal torque in Nm

(2) N max = maximum speed in RPM

0.61 = Value in Nm corresponding to the peak stall torque of servo drive-motor combination



### To order a BSH motor, please use these references

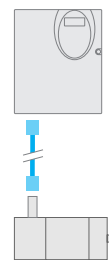
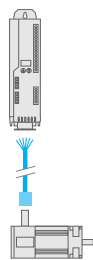
Reference to be completed:		BSH	●●●	●	●	●	●	●	●	A
Flange size	55 mm	055								
	70 mm	070								
	100 mm	100								
	140 mm	140								
	205 mm	205								
Length (Number of magnet stacks)	1			1						
	2			2						
	3			3						
	4			4						
Winding type	Lowest speed				M					
	Medium speed				P					
	Highest speed				T					
Shaft (1)	w/o key (smooth) : IP40 (IP65)					0				
	with key : IP40 (IP65)					1				
	w/o key : IP65					2				
	with key IP65					3				
Encoder	Absolute SinCos, single turn (128 periods per revolution)						1			
	Absolute SinCos multi turn (4096 revolutions)						2			
Brake	w/o brake							A		
	with brake							F		
Connection System	Straight connector								1	
	right angle turnable connector								2	
Mounting	International standard mounting									A

## BDH servo motors

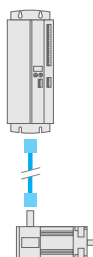
### To order a BDH motor, please use these references

Reference to be completed:		BDH	●●●	●	●	●	●	●	●	●
Flange size	40 mm	040								
	58 mm	058								
	70 mm	070								
	84 mm	084								
	108 mm	108								
	138 mm	138								
	188 mm	188								
Length (Number of magnet stacks)	1			1						
	2			2						
	3			3						
	4			4						
	5			5						
Winding type					A à Z					
Shaft end	IP 54	Untapped				0				
		Keyed				1				
	IP 67	Untapped				2				
		Keyed				3				
Integrated sensor	Single turn, SinCos Hiperface® 4096 points/turn						1			
	Multi-turn, SinCos Hiperface® 4096 points/turn, 4096 turns						2			
	2-pole resolver						5			
Holding brake	None							A		
	With							F		
Connection	Angled connectors that can be rotated through 90°								2	
Flange	International IEC standard									A
	NEMA									B

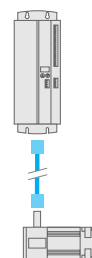
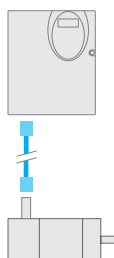
(1) Other possibilities to be detailed: see [www.telemecanique.com](http://www.telemecanique.com)



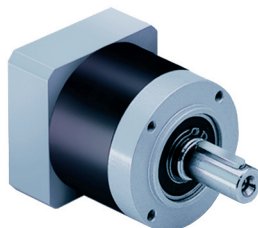
Cable type		Power cable fitted with 1 connector (servo motor side)			
Servo motor type	BSH	055●● / 070●● / 100●●	1401T / 1402T / 1403P / 1404P	2051M	2051P
		1401P / 1402M / 1402P / 1403M / 1404M			
Servo drive type	BDH	040●●/058●●/070●●/ 084●●/108●E/108●G/ 108●K/138●G/138●K			
		LXM05 All type	LXM15 L.....	LXM05 D42M3X / D57N4	LXM05 D57N4
Composition		4x1.5 mm <sup>2</sup> + 2x1 mm <sup>2</sup>	4x2.5 mm <sup>2</sup> + 2x1 mm <sup>2</sup>	4x4 mm <sup>2</sup> + 2x1 mm <sup>2</sup>	
Reference	L = 3 m	VW3M5101R30	VW3M5101R30	VW3M5102R30	VW3M5103R30
	L = 5 m	VW3M5101R50	VW3M5101R50	VW3M5102R50	VW3M5103R50
	L = 10 m	VW3M5101R100	VW3M5101R100	VW3M5102R100	VW3M5103R100
	L = 15 m	VW3M5101R150	VW3M5101R150	VW3M5102R150	VW3M5103R150
	L = 20 m	VW3M5101R200	VW3M5101R200	VW3M5102R200	VW3M5103R200
	L = 25 m	VW3M5101R250	VW3M5101R250	VW3M5102R250	VW3M5103R250
	L = 50 m	VW3M5101R500	VW3M5101R500	VW3M5102R500	VW3M5103R500
	L = 75 m	VW3M5101R750	–	VW3M5102R750	VW3M5103R750



Cable type		Power cable fitted with 2 connectors			
Servo motor type	BSH	1003P / 1004● / 1401M / 1401P / 1402M / 1402P / 1403M / 1404M	1401T / 1402T / 1403P / 1404P	2051M	2052M / 2052P / 2053M / 2053P
		BDH	084●● / 108●K / 138●K / 188●K	108●L / 108●M / 138●L / 138●M / 188●L / 188●M	108●N / 108●P / 138●N / 138●P / 188●P
Servo drive type		LXM15 MD..N4			LXM15 HC..N4X
Composition		4x1.5 mm <sup>2</sup> + 2x1 mm <sup>2</sup>	4x2.5 mm <sup>2</sup> + 2x1 mm <sup>2</sup>	4x4 mm <sup>2</sup> + 2x1 mm <sup>2</sup>	4x10 mm <sup>2</sup> + 2x1 mm <sup>2</sup>
Reference	L = 3 m	VW3M5201R30	VW3M5202R30	VW3M5203R30	–
	L = 5 m	VW3M5201R50	VW3M5202R50	VW3M5203R50	–
	L = 10 m	VW3M5201R100	VW3M5202R100	VW3M5203R100	VW3M5304R100
	L = 15 m	VW3M5201R150	VW3M5202R150	VW3M5203R150	–
	L = 20 m	VW3M5201R200	VW3M5202R200	VW3M5203R200	VW3M5304R200
	L = 25 m	VW3M5201R250	VW3M5202R250	VW3M5203R250	–
	L = 50 m	VW3M5201R500	VW3M5202R500	VW3M5203R500	VW3M5304R500
	L = 75 m	VW3M5201R750	VW3M5202R750	VW3M5203R750	–
	L = 100 m	–	–	VW3M5304R1000	–



Cable type		Encoder cable SinCos Hiperface fitted with 2 connectors		Resolver cable fitted with 2 connectors
Servo motor type	BSH	All type	All type	All type
	BDH	–	All type	All type
Servo drive type	LXM05	LXM05	LXM15	LXM15
	All type	All type	All type	All type
Composition		5x(2x2.5 mm <sup>2</sup> ) + 2x0.5 mm <sup>2</sup>	5x(2x0.25 mm <sup>2</sup> ) + 2x0.5 mm <sup>2</sup>	5x(2x0.25 mm <sup>2</sup> ) + 2x0.5 mm <sup>2</sup>
Reference	L = 3 m	VW3M8101R30	VW3M8301R30	VW3M8401R30
	L = 5 m	VW3M8101R50	VW3M8301R50	VW3M8401R50
	L = 10 m	VW3M8101R100	VW3M8301R100	VW3M8401R100
	L = 15 m	VW3M8101R150	VW3M8301R150	VW3M8401R150
	L = 20 m	VW3M8101R200	VW3M8301R200	VW3M8401R200
	L = 25 m	VW3M8101R250	VW3M8301R250	VW3M8401R250
	L = 50 m	VW3M8101R500	VW3M8301R500	VW3M8401R500
L = 75 m	VW3M8101R750	VW3M8301R750	VW3M8401R750	



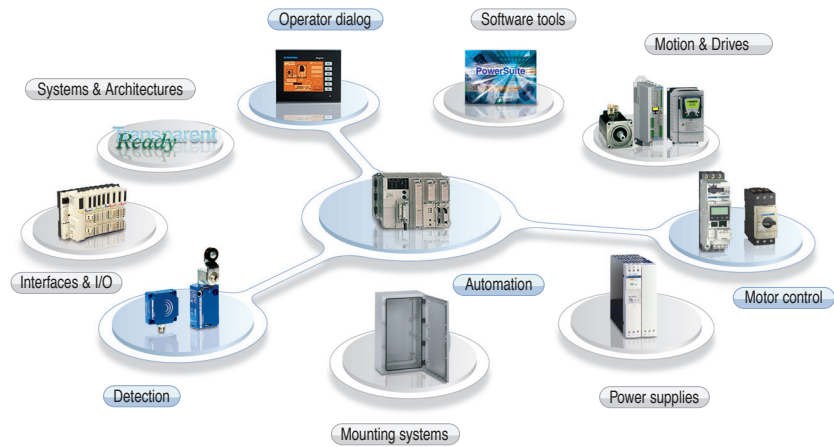
Schneider Electric has selected GBX gearboxes made by Neugart to be used in association with the BSH and BDH servo motor ranges. As their association with BSH or BDH servo motors has been fully qualified and they are very easy to mount, the gearboxes are simple to put into operation and risk free. Available in 5 sizes (GBX 40... GBX 160), the planetary gearboxes are offered in 12 gear ratios (3:1...40:1).

To order a GBX planetary gearbox, complete each reference with

Reference to be completed:			GBX	●●●	●●●	●●●	●	●	
Size (Junction box diameter)		40 mm	040						
		60 mm	060						
		80 mm	080						
		115 mm	120						
		160 mm	160						
Speed 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					
		32:1		032					
		40:1		040					
Servo motor	Associated BDH	Type	BDH 040			040			
			BDH 058			058			
			BDH 070			070			
			BDH 084			084			
			BDH 108			108			
			BDH 138			138			
	Associated BSH	Type	BSH 055			055			
			BSH 070			070			
			BSH 100			100			
			BSH 140			140			
			BSH 205			205			
		Model		BSH ou BDH ●●●1					1
			BSH ou BDH ●●●2					2	
			BSH ou BDH ●●●3					3	
			BSH ou BDH ●●●4					4	
			BDH ●●●5					5	
	Servo motor adaptation		BDH						D
		BSH						F	

# The efficiency of Telemecanique® branded solutions

Used in combination, Telemecanique products provide quality solutions, meeting all your **Automation & Control** applications requirements.



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- You can be sure to find the range of products that are right for you and which complies fully with the standards in the country where they are used.

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Schneider Electric Motion

Simply Smart!

Owing to changes in standards and equipment, the characteristics given in the text and images in this document are not binding until they have been confirmed with us.

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