



Innovation on demand



SERVOSTAR
600

THE
FLEXIBLE
DRIVE



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KOLLMORGEN
Seidel

The motive force

What and where ?



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SERVOSTAR™ 600 series:

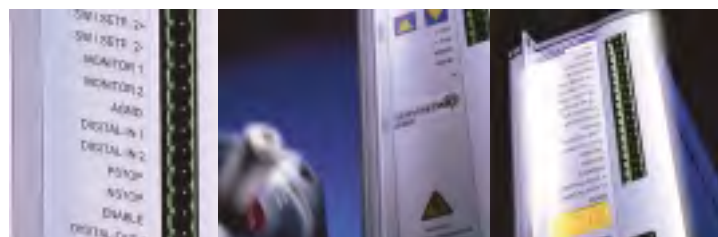
We keep things moving

With the SERVOSTAR™ 600 series, Kollmorgen Seidel is presenting a generation of digital servo amplifiers that is tried and tested in the marketplace. The addition of two new power levels to the range, and the availability of fieldbus interfaces, are further important steps in achieving our company's aim: to keep things moving. The path leads through the permanent improvement of our products and services. To the benefit of our customers.



Tailor-made solutions

- 8 power ratings from 1.5 to 70A
- 4 sizes, one design
- up to 20A : suitable for 300mm switchgear cabinets, above 40A : for 400mm cabinets
- resolver and encoder feedback, selectable - in the standard version
- position controller, CANopen, electrical gearing and much more - in the standard version
- no external shielding terminals required
- LED display and keypad on the front panel, for the most important functions and setting the parameters
- slot for expansion card
- encoder-emulation selectable as ROD426 compatible (dec./bin.) or SSI (Gray/binary)

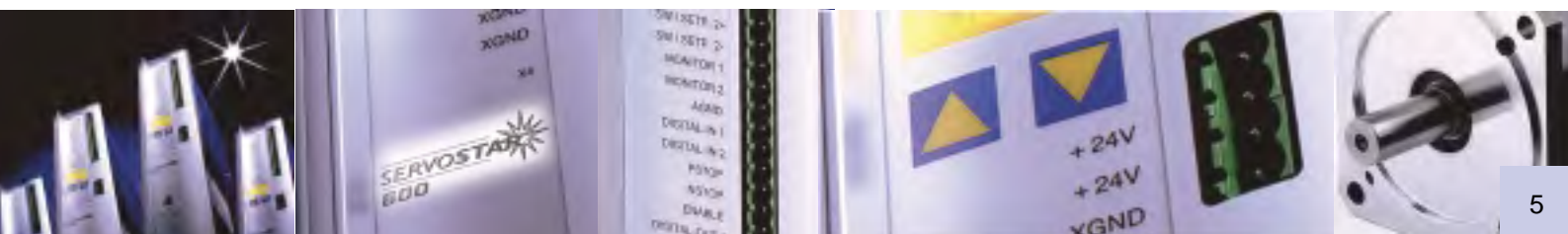


the concept

Dreams come true:

SERVOSTAR™ 600 incorporates the years of experience of our development and applications engineers. This generation of digital servo amplifiers has enabled us to include the answers to a large number of the specific wishes of our customers in the standard version.

Your requirements	Our solution
Worldwide usability	<ul style="list-style-type: none">● fulfills all CE and UL standards● can be connected to all grounded (earthed) industrial supply networks
High flexibility	<ul style="list-style-type: none">● unrestricted possibilities for application and communication, through open hardware and software architecture● freely programmable for individual drive tasks● system integration via CANopen, PROFIBUS DP, SERCOS or I/O-expansion
Simple operation	<ul style="list-style-type: none">● 2-key operation with 3-character LED display in front panel● Windows™ operator software with oscilloscope function
Precise control and exact positioning	<ul style="list-style-type: none">● feedback from:<ul style="list-style-type: none">- resolver- high-resolution sine-cosine encoder- high-resolution absolute-position encoder● very short cycle time for the current controller - 62 µs
Low power dissipation	<ul style="list-style-type: none">● reduced switching losses in the output stage● patented circuit for distributing the ballast power● DC-link circuits can be connected in parallel
High reliability	<ul style="list-style-type: none">● 2 years guarantee



SERVOSTAR™ 601- 620 :

High flexibility

Thanks to its open hardware and software architecture, SERVOSTAR™ 600 is ready for all customer-specific requirements.

The motor database that is included enables an optimum adaptation to the motor which is used.

Simple installation and problem-free commissioning are outstanding features of the SERVOSTAR™ 600.

It can be used world-wide, in all sectors of automated production technology.

Top Design and

Top Performance

- Wide range of input voltage
- All filters are integrated (for Class A)
- Fulfills all CE-, UL- and cUL standards
- Two analog setpoint inputs
- Six digital inputs/outputs
- Selectable feedback:
resolver or high-resolution sine-cosine encoder
- CANopen included
- RS232 included
- Pulse-direction interface included
- Electrical gearing included
- Integral position controller
- Slot for an expansion card:
PROFIBUS DP fieldbus interface
SERCOS fieldbus interface
I/O expansion
- Integral ballast resistor, external ballast resistor can be connected



compact performance

Technical data

		SERVOSTAR™					
Rated data	DIM	601	603	606	610	614	620
Rated supply voltage	V~	3 x 230V _{-10%} ... 480V ^{+10%} , 50 ... 60Hz					
Rated installed power for S1 operation	kVA	1	2	4	7	10	14
Rated DC-link voltage	V=	310 ... 675					
Rated output current (effective value +/-3%)	Arms	1,5	3	6	10	14	20
Peak output current (5s max., +/-3%)	Arms	3	6	12	20	28	40
Continuous internal regen power (RBint)	W	80	80	200	200	200	200
Continuous external regen power (RBext)max.	kW	0,5	0,5	1,5	1,5	1,5	1,5
Peak external regen power (RBext) max.	kW	21	21	21	21	21	21



The sizes for 300mm switchgear cabinets

		SERVOSTAR™		
Type	601 / 603 / 606 / 610	614	620	
Height	275 mm	275 mm	275 mm	
Width	70 mm	100 mm	120 mm	
Depth	265 mm	265 mm	265 mm	
Depth with connectors	273 mm	273 mm	273 mm	

SERVOSTAR™ 640 / 670:

SERVOSTAR™

shows its muscles

Since the premiere of the SERVOSTAR™ at the 1998 Hannover Fair it has become firmly established in the market for the power range up to 14 kVA.

For drive applications that make the toughest demands on the dynamics, at a high power level, we are expanding the series by two power levels this year.

So SERVOSTAR™ now offers its well-known outstanding technical features at the higher power levels as well.

Brawn and brains

- rated input voltage range:
3 x 400V_{-10%} to 3 x 480V_{+10%}
- integrated 24V filter, mains filter external
- Fulfills all CE standards, also UL listed from 4th quarter 1999
- two analog setpoint inputs
- six digital inputs/outputs
- selectable feedback:
resolver or high-resolution sine-cosine encoder
- CANopen included
- RS232 included
- pulse-direction interface included
- electrical gearing included
- integral position controller
- slot for expansion card:
PROFIBUS DP fieldbus interface
SERCOS fieldbus interface
I/O expansion
- external ballast resistor



power and dynamics

Technical data

		SERVOSTAR™	
Rated data	DIM	640	670
Rated supply voltage	V~	3 x 400V _{-10%} ... 480V ^{+10%} , 50 ... 60Hz	
Rated installed power for S1 operation	kVA	30	50
Rated DC-link voltage	V=	560 ... 675	
Rated output current (effective value +/-3%)	Arms	40	70
Peak output current (5s max., +/-3%)	Arms	80	140
Continuous external regen power (RBext)max.	kW	6	6
Peak external regen power (RBext) max.	kW	45	70



The sizes for 400mm switchgear cabinets

	SERVOSTAR™
Type	640 / 670
Height	345 mm
Width	250 mm
Depth	300 mm
Depth with connectors	325 mm

It's all standard — with

Multi-functionality
is standard

Encoder emulation, incremental or synchronous serial.
Input for **encoder tracking** (master-slave operation).
Pulse-direction input for connection to a stepper motor control.

Input for feedback unit: 2 to 12-pole **resolver**.

Slot for expansion card I/O-14/8, SERCOS, PROFIBUS

RS232 and **CANopen** interface in one connector, for the parameterization of several servo amplifiers without changing connections.

Input for high-resolution feedback unit: **sine-cosine encoder** or **absolute-value encoder**

Control signals (electr. isolated)
ready-to-operate relay
2 analog setpoint inputs
2 analog monitor outputs
4 digital inputs
2 digital outputs
Enable input
Analog/digital signal grounds

24V DC auxiliary supply
double terminals for the parallel supply of several servo amplifiers

Mains supply connection
double terminals for the parallel supply of several servo amplifiers

DC-link
for parallel connection of several servo amplifiers (to distribute the ballast power)

Connections for **motor and brake**

Connection for **external ballast resistor**



SERVOSTAR™ 6xx

Current controller,

62.5µs cycle time

The current controller is the heart of the servo amplifier:

- Bandwidth greater than 1200Hz
- Setting through motor-specific default values from the database stored in the amplifier
- Control as field coordinates

Speed controller,

250µs cycle time

The speed controller is very robust. The parameters in the integrated motor database enable an optimum adjustment to the mechanism.

- Setpoint ramps are adjustable
- Setpoint inputs can be added or multiplied together
- Dead-band is adjustable

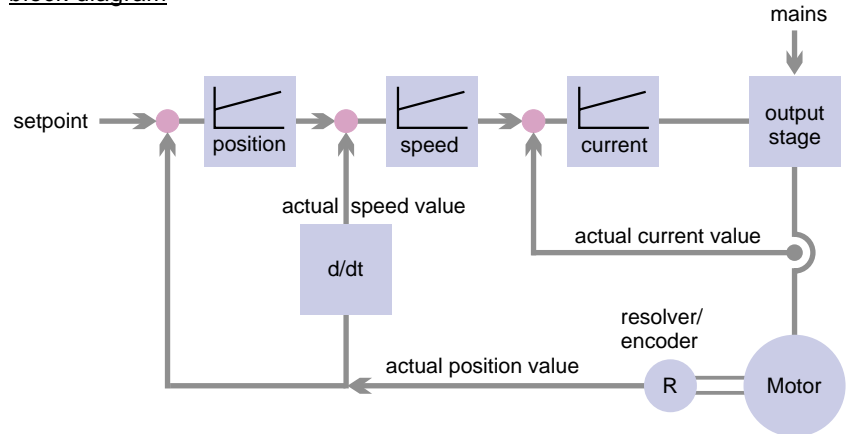
Position controller,

250µs cycle time

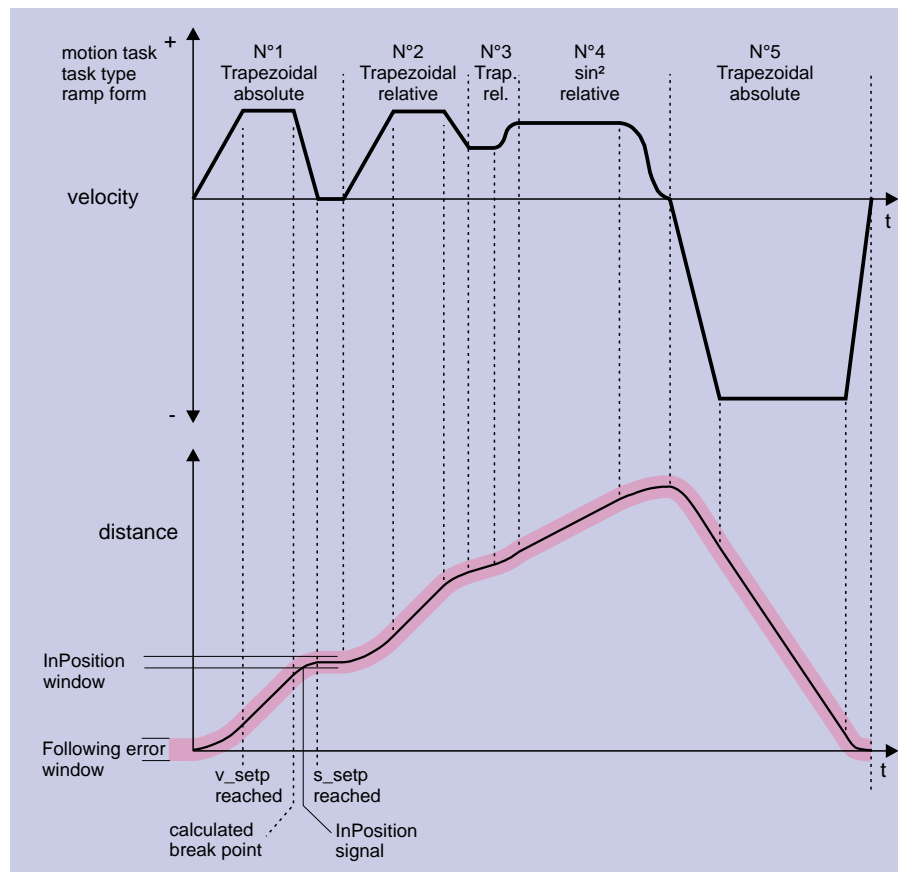
For many applications, the integrated position controller can save additional CNC functions.

- 180 motion blocks can be stored in the servo amplifier
- 10 types of homing
- 4 10 types of homing
- Speed profile / register control is possible
- Adjustable jolt limiting
- Linking of motion tasks
- Absolute and relative movements
- Adjustable following-error window
- Adjustable window for the InPosition signal

block diagram



example of a motion profile

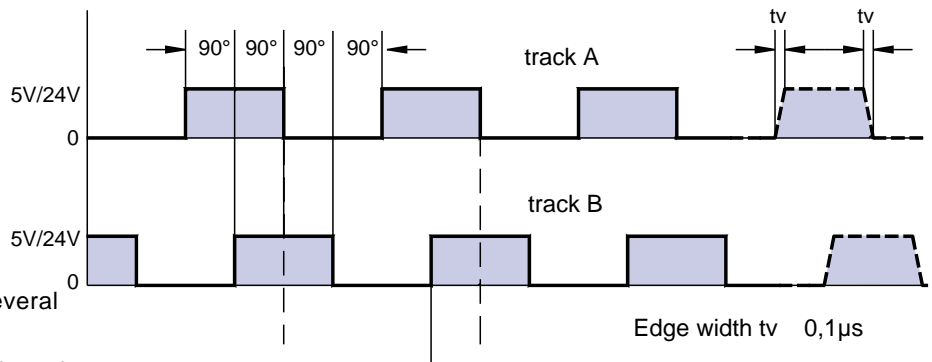


and this is standard too,

Electronic gearing

The servo controller receives a position setpoint from an incremental angular encoder, and regulates the position of the motor shaft in synchronism with this master signal.

- 24V and 5V encoder inputs
- adjustable gearing ratio



Interface for master-slave operation

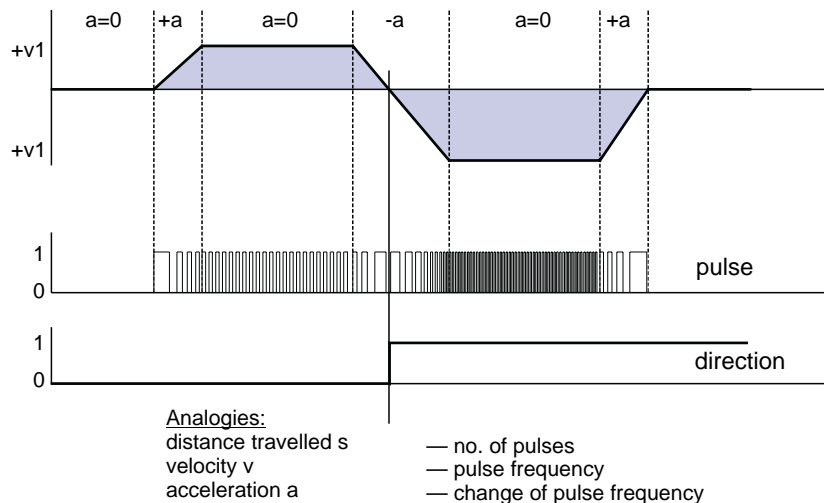
This interface can be used to link several SERVOSTAR™ 600 units together. The slaves follow the position setpoint value of the master. The encoder output (encoder emulation) of the master is connected to the encoder inputs of the slaves.

- 1 master, up to 16 slaves
- Resolution (gearing ratio) is adjustable

Interface for stepper motor controls

This interface makes it possible to connect the SERVOSTAR™ 600 to a stepper motor controller, regardless of the make. The pulse and direction signals are evaluated, and the servomotor is operated and controlled as if it was a stepper motor.

- 24V or 5V driving voltage level
- Adaptation to all types of controller, through the adjustable conversion ratio (number of steps)
- No steps are lost



with SERVOSTAR™ 6xx

CANopen interface:

for you - free

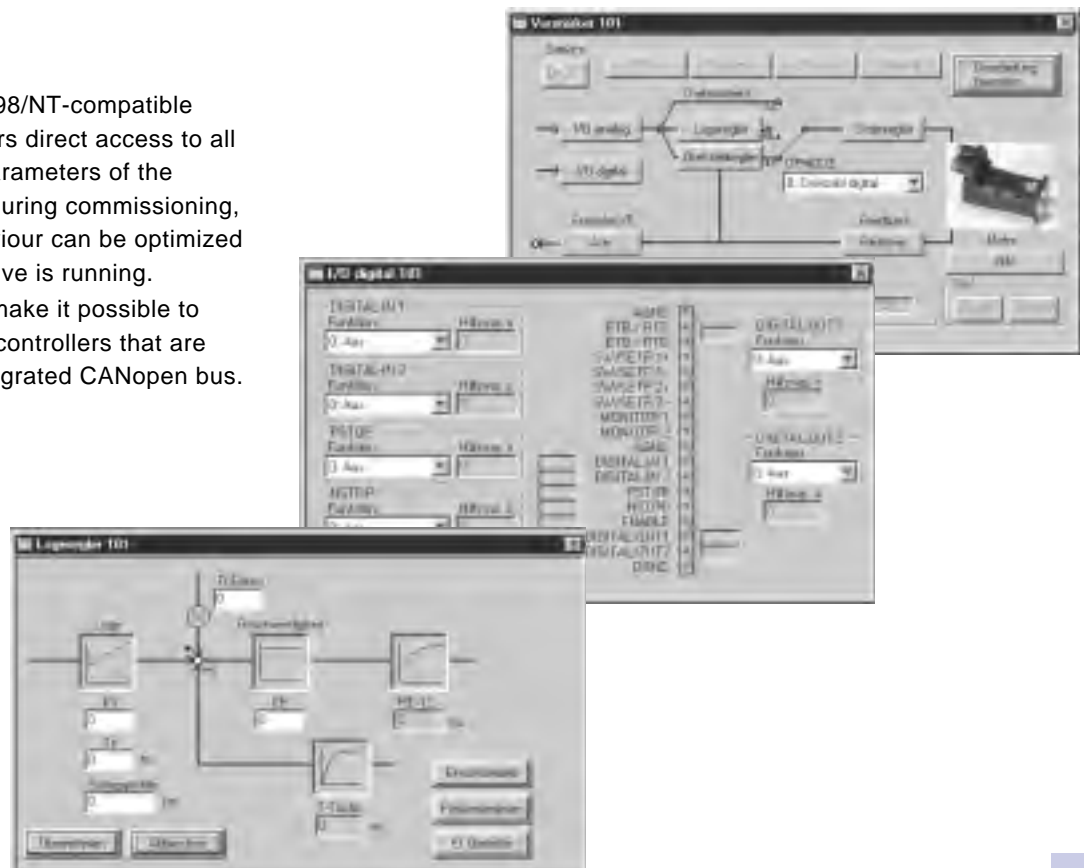
A CANopen interface is integrated into the standard instrument. This fieldbus interface can be used for the connection to a master that has a CAN bus interface. If several SERVOSTAR™ 600 are linked together through the CANopen interface, then the entire group can be parameterized and commissioned with the aid of a PC and the WINDOWS™ operator software, without requiring a master.

- Transmission procedure:
 - CAN standard ISO 11898 (high-speed communication)
 - 1MBit/s max. transmission speed
 - supports the CANopen standards DS301, DSP402
- Setup functions:
 - homing, jogging, digital setpoint provision
- Positioning functions:
 - perform a motion task from the motion-task memory of the servo amplifier
 - perform a direct motion task
- Data transfer functions:
 - read/write motion tasks and controller parameters
 - read actual values, error register and status register

WINDOWS™

operator software

The WINDOWS™ 95/98/NT-compatible operator software offers direct access to all the relevant control parameters of the SERVOSTAR™ 600. During commissioning, the control-loop behaviour can be optimized on-line — while the drive is running. Windows techniques make it possible to display several servo controllers that are linked through the integrated CANopen bus.



Options and expansion

Option -AS- :

restart lockout for personnel safety

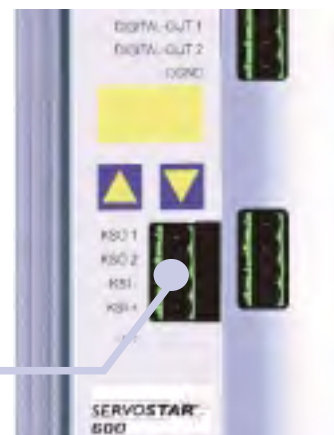
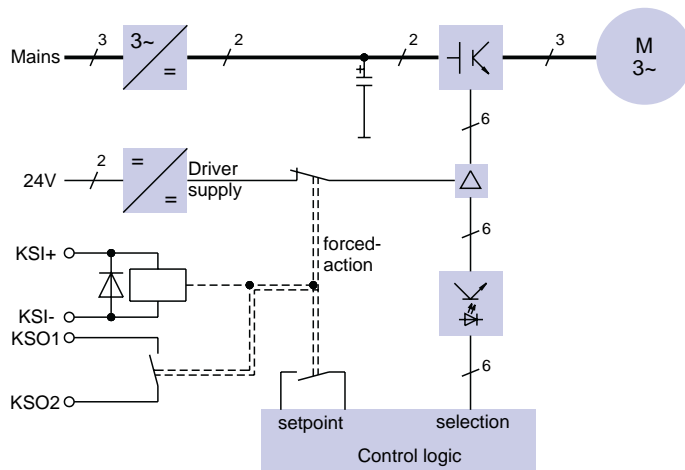
One application task that is frequently needed is the personnel-safety requirement to secure a drive against restarting.

The Option -AS- uses an additional connector to provide connections to a safety relay with positive-action contacts in the servo controller.

Under the control of the higher-level control, the relay switches off the output stages to ensure personnel safety and prevents an unintended restart of the drive, even in the event of a fault.

The advantages of this solution are obvious:

- no power contactor required
- no switching of the main supply circuitry
- low wiring requirement
- the functionality and personnel safety is attested by the trade liability association



Additional connector

I/O-expansion card

The I/O-expansion card is an extremely economical way of operating servo controllers under position control for simple automation tasks.

14 additional digital inputs permit the selection and start of the motion tasks that are stored in the motion-task memory of the SERVOSTAR™ 600. All the important functions for the position controller that is integrated into the servo controller can thus be operated from a small, independent control system.

8 digital outputs report the status of the drive to the higher-level control.

The expansion card can be fitted without any other work being required.



cards

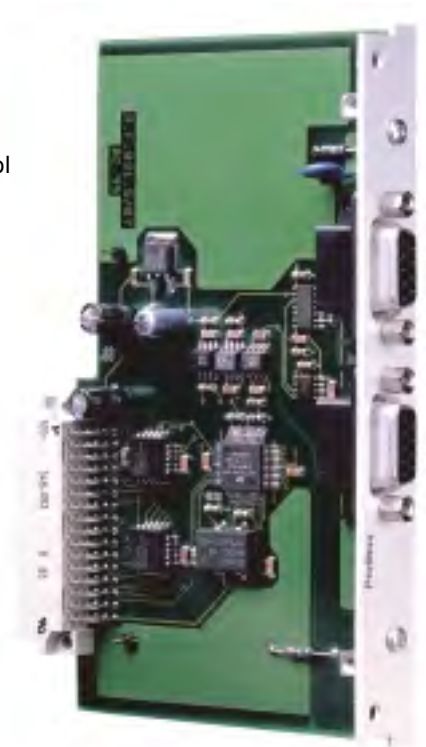
Expansion card for PROFIBUS DP,

speeds up to 12 MBaud

The servo controller can also be operated through a PROFIBUS DP interface. The modules that are supplied for the widely used S5/S7 control system make the programming considerably easier.

The high transmission rate allows short PLC cycle times.

- Transmission procedure:
 - PROFIBUS DP to EN 50170
 - baud rates 187.5 kBaud to 12 MBaud
 - supports the PROFIBUS drive profile PROFIDRIVE
- Setup functions:
 - homing, jogging, digital setpoint provision
- Positioning functions:
 - perform a motion task from the memory of the servo amplifier
 - perform a direct motion task
- Data transfer functions:
 - read/write motion tasks and controller parameters
 - read actual values, error register and status register
- The expansion card can be fitted without any additional work



Expansion card for SERCOS-Interface,

for precisely coordinated movements

The SERVOSTAR™ 600 can now communicate with your control through a SERCOS-Interface.

This expansion card makes it possible to transmit setpoint and actual values with different cycle times (1 to 65 ms) with an additional interpolation of the setpoints within the drive.

This enables a synchronization that is exact to the μ s, for fast, precise multi-axis control.

- Transmission procedure:
 - SERCOS standard to IEC 61491
 - transmission through interference-proof optical fibres
 - baud rate pre-selectable to 2 or 4 MBaud
 - optical output power is adjustable
- Setup functions:
 - homing, measurement functions
- Positioning functions:
 - digital speed or position control
- Data transfer functions:
 - read/write controller parameters and diagnostics data
 - pre-selectable scaling of the setpoint and actual values
- The expansion card can be retrofitted



6SMx7 motor series :

Proven and versatile

The synchronous servomotors of the 6SMx7 series have an impressively high quality level. They have excellent smooth-running characteristics and an outstandingly high overload capability.

When used with the SERVOSTAR™ 600, they are extremely well suited for positioning tasks with requirements to high dynamics and robustness.



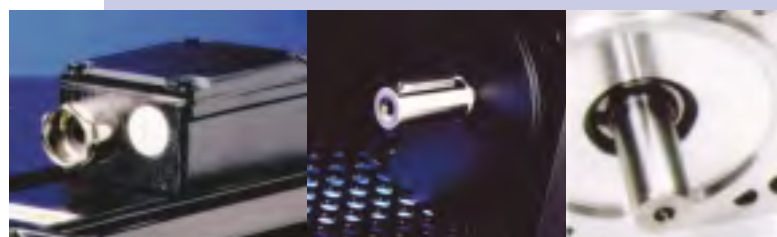
Motor construction

- Neodymium magnets in the rotor.
- A 2-pole resolver is built in as a feedback unit. Commutation is made electronically in the amplifier.
- Brushless operation means that no maintenance is required.
- The smooth surface of the motor prevents excessive contamination.
- External cooling not necessary, thanks to the good heat transfer through the motor housing.
- The winding temperature is monitored by temperature sensors in the stator windings and signalled by a floating contact (n.c. break).
- 2 years guarantee

- Continuous standstill torque 0.32 to 32 Nm
- Frame type B5 to DIN 42950
- Shaft end A (k6) without keyway slot
- Flange (j6) to DIN 42955, tolerance class R
- Integrated resolver
- Enclosure IP 64, vibration rating N

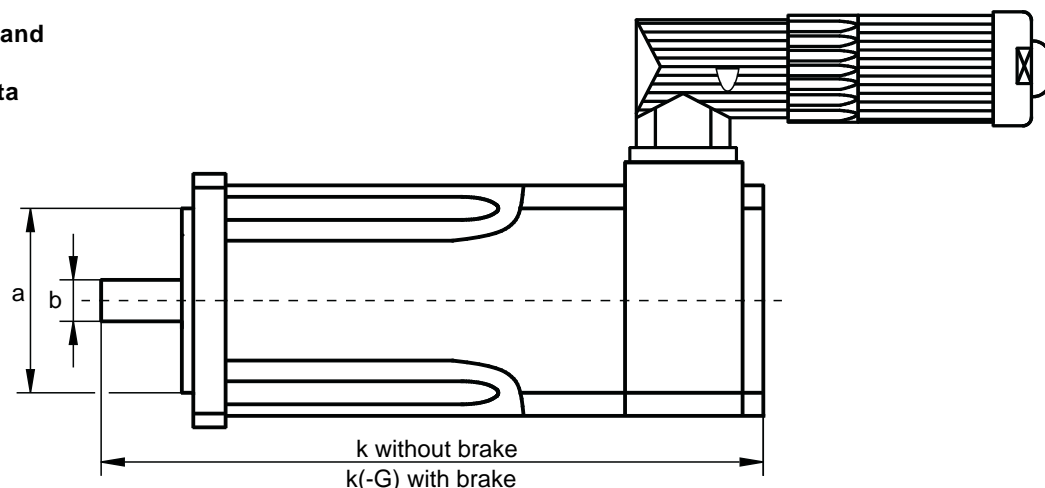
Options:

- High-resolution sine-cosine encoder
- High-resolution absolute encoder
- Built-in holding brake
- Special flange, special shaft (with keyway)
- Enclosure IP65 with radial shaft sealing ring
- Fitted gearbox



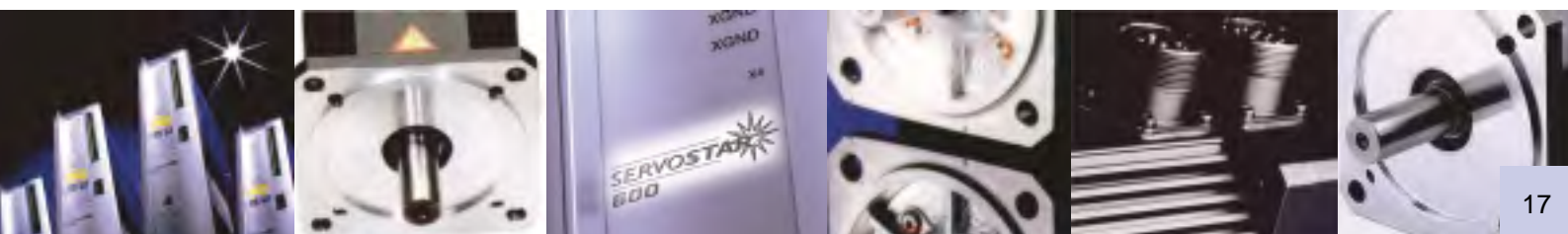
versatile and reliable

Dimensions and technical data



Symbol: Units:	Standstill torque Mo Nm	Standstill current Io A	Rated speed n* 1/min	Back EMF KE mV/min	Moment of inertia J kgcm ²	Weight normal G kg	Dimensions			
							a ₁₆ mm	b _{k6} mm	k mm	k(-G) mm
6SM27M	0,32	0,8	4000	25	0,08	1,1	40	9	142	175
6SM27LL	0,8	0,82	4500	59	0,14	1,45	40	9	172	205
6SM37S	0,5	1,0	6000	30	0,45	1,9	60	11	139	172
6SM37M	1,0	1,6	6000	38	0,70	2,3	60	11	157	190
6SM37L	1,5	1,6	4000	58	1,0	2,9	60	11	175	208
6SM37VL	3,0	3,8	6000	48	1,6	3,5	60	14	225	258
6SM47L	3,0	2,3	3000	81	1,6	3,5	80	14	218	251
6SM57S	4,6	2,8	3000	97	3,1	5,7	95	19	225	260
6SM57M	8,0	4,3	3000	112	4,5	7,6	95	19	270	305
6SM77K	11	6,0	3000	112	12,6	9,8	130	24	266	309
6SM77S	17	10	3000	103	18	14	130	24	321	364
6SM107K	26	16	3000	97	82	28	180	32	298	342
6SM107S	32	20	3000	97	104	32,5	180	32	321	365

* Details for 400V supply voltage



The highly dynamic

The pot of gold

among the servomotors

Extreme acceleration values and extremely smooth running (no cogging) are the distinguishing features of the Kollmorgen **GOLDLINE™BH** series of servomotors.

When used in combination with the **SERVOSTAR™ 600**, these motors are superbly well suited for positioning tasks with the highest dynamics and robustness in worldwide applications.



Motor construction

- fulfil all CE and UL standards
- Neodymium magnets in the rotor.
- A 2-pole resolver is built in as a feedback unit. Commutation is made electronically in the amplifier.
- Brushless operation means that no maintenance is required.
- External cooling not necessary, thanks to the good heat transfer through the motor housing.
- The winding temperature is monitored by temperature sensors in the stator windings and signalled by a floating contact (n.c. break).
- 2 years guarantee

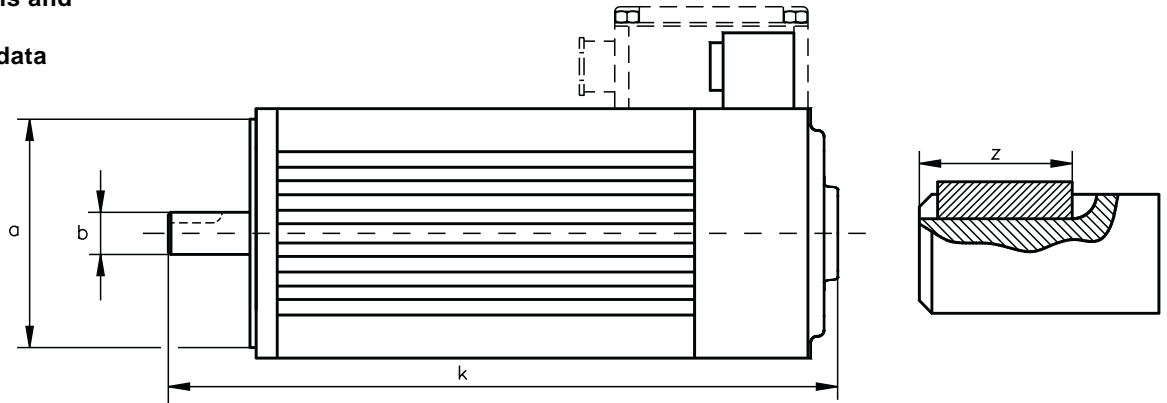
- Continuous standstill torque 0,7 to 124 Nm
- Frame type B5 to DIN 42950
- Shaft end A (k6) with keyway slot
- Flange (j6) to DIN 42955, tolerance class N
- Integrated resolver
- Enclosure IP 64, vibration rating N

Options:

- High-resolution sine-cosine encoder
- High-resolution absolute encoder
- Built-in holding brake
- Special flange, special shaft (without keyway)
- Enclosure IP65 with radial shaft sealing ring
- Fitted gearbox

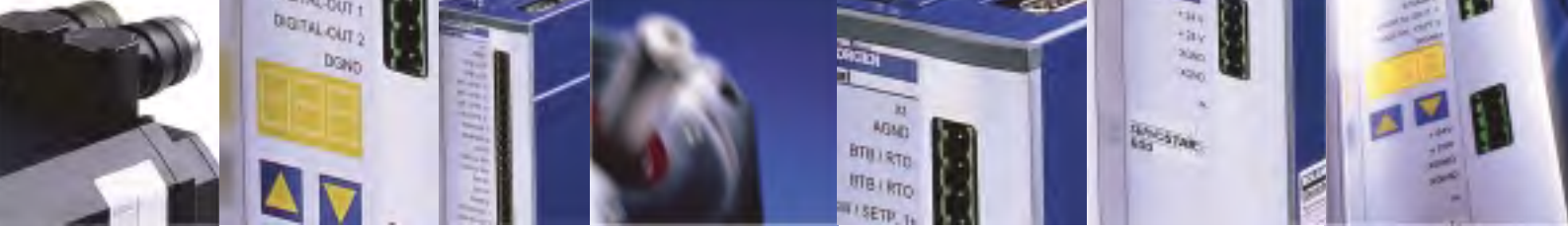
GOLDLINE™ BH motors

Dimensions and technical data



Symbol: Units:	Standstill torque Mo Nm	Standstill current Io A	Rated speed n* 1/min	Back EMF KE mV/min	Moment of inertia J kgcm ²	Weight normal G kg	Dimensions			
							a ₆ mm	b _{k6} mm	k mm	z mm
BH-122A	0,7	1,0	6000	42,6	0,3	2,5	60	11	228	14,0
BH-124B	1,3	1,8	6000	44,9	0,46	3,2	60	14	264	19,8
BH-126B	1,9	2,6	6000	44,9	0,76	3,9	60	14	295	19,8
BH-222B	2,1	1,3	3000	98	1,0	4,1	80	14	266	19,8
BH-224B	3,8	2,2	3000	103	1,7	6,2	80	14	306	19,8
BH-226C	5,5	4,4	4000	75,4	2,5	7,6	80	14	345	19,8
BH-226E	5,6	3,0	2500	112	2,5	7,6	80	14	345	19,8
BH-422D	5,8	4,0	3600	87,4	3,2	8,4	110	24	315	37
BH-424B	11,3	4,2	2000	162	7,0	12,5	110	24	369	37
BH-424D	11,1	6,3	3000	106	6,6	12,5	110	24	369	37
BH-426B	15,8	8,1	2500	118	10,0	16,0	110	24	422	37
BH-426H	15,7	9,1	3000	105	10,0	16,0	110	24	422	37
BH-622B	14,9	8,4	3000	107	10,3	16,8	130	24	350	37
BH-624D	25,8	12,4	2500	125	20,3	23,0	130	24	418	37
BH-624C	27,6	19,0	3600	90	20,3	23,0	130	24	418	37
BH-626E	35,4	20,0	3000	108	30,4	30,0	130	32	486	39
BH-822D	34,7	18,1	3000	116	48,8	35,8	180	32	418	39
BH-824D	66	32,0	2500	126	84,0	51,0	180	32	508	39
BH-824A	66	37,0	3000	108	84,0	51,0	180	32	508	39
BH-826C	93	40,0	2500	141	126	67,0	180	48	621	60
BH-826D	93	52,0	3000	103	126	67,0	180	48	621	60
BH-828B	124	50,0	2500	150	168	82,0	180	48	742	60

* Details for 400V supply voltage



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