

S700 Servo Drives

Integrated safety functions contribute to increased machine availability and therefore increase productivity. The S700 models include a verified STO (Safe Torque Off) function as standard. The optional safety enhancement cards enable numerous safety functions such as "Safe Stop", "Safe Limited Speed", and "Safe Direction" for SIL2 or SIL3 applications.

All S700 servo drives use standardized, high-performance control technology. Rapid current, speed, and position control offers maximum performance and ensures that all axes are optimally synchronized at all times. Very quick and precise control allows for shorter work cycles and therefore considerable increases in productivity.

Specific application tasks and functions can be programmed with the integrated macro language (IEC 61131). The Macrostar development tool enables the implementation of expanded processes for individual axes.

Practical functions such as autotuning, Bode plots, and cogging suppression simplify optimization, both for applications with high dynamics and also those with high precision.

The Advantages of S700 Servo Drives

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|--|---|
| <ul style="list-style-type: none"> • Higher productivity | <ul style="list-style-type: none"> • Very quick current, speed, and position control increase machine cycle rates • SIL2 and SIL3 safety functions in accordance with IEC 61508 increase machine availability • Many reference run methods • 200 motion tasks can be saved • Integrated macro language for high-performing drive tasks |
| <ul style="list-style-type: none"> • A version for all applications | <ul style="list-style-type: none"> • Multi-interface • Multi-feedback • Synchronous servo motors • Direct drives, rotary and linear drives • Asynchronous motors • HF motors • DC motors |
| <ul style="list-style-type: none"> • Smaller switch cabinets | <ul style="list-style-type: none"> • Integrated EMC filters • Mains supply integrated • Brake resistor integrated for up to 24 A of nominal current • No mains choke usually necessary |
| <ul style="list-style-type: none"> • Faster start-up | <ul style="list-style-type: none"> • Memory card for parameter and firmware updates • All connections via connectors • Autotuning |
| <ul style="list-style-type: none"> • User-friendly | <ul style="list-style-type: none"> • Specific setup depending on the type of application • SI units calculator • Context-sensitive online help • Wiki system for technical background information |

S700 series digital servo drives are available in rated current options of 1.5 A, 3 A, 6 A, 12 A, 24 A, 48 A, and 72 A. Customers can benefit from a consistent servo concept from a single source, which enables time and cost savings in project development, installation, and start-up. The finely staged scaling of the drive powers allow optimum adjustment to the requirements of each individual axis in the system, resulting in outstanding overall machine performance.

General Specifications

Rated data	DIM	S701	S703	S706	S712	S712S*	S724	S724S*	S748	S772
Rated line voltage	Vac	1 x 110 V to 230 V, 3 x 208 V -10% to 3 x 480 V +10%							3 x 208 V to 3 x 480 V	
Rated line power for S1 operation	kVA	1.1	2.2	4.5	9	9	18	18	35	50
Auxiliary supply	Vdc	24								
Rated DC-link voltage	Vdc	290 to 675								
Rated output current (rms value)										
At 1 x 110 V	A _{eff}	1.5	3	6	7	7	10	10	It is also referred to as Commutation Alignment and Pole Locking. It is also referred to as Commutation Alignment and Pole Locking. It is also referred to as Commutation Alignment and Pole Locking.	It is also referred to as Commutation Alignment and Pole Locking. It is also referred to as Commutation Alignment and Pole Locking. It is also referred to as Commutation Alignment and Pole Locking.
At 3 x 110 V	A _{eff}	2.5	5	6	12	12	24	24		
At 1 x 230 V	A _{eff}	1.5	3	6	8	8	11	11		
At 3 x 230 V	A _{eff}	2	4	6	12	12	24	24	48	72
At 3 x 400 V	A _{eff}	1.5	3	6	12	12	24	24	48	72
At 3 x 480 V	A _{eff}	1.5	3	6	12	12	24	24	48	72
Peak output current	A _{eff}	4.5	9	18	24	30	48	72	96	140

* Higher peak current



S701 - 712



S724



S748 / 772

Dimensions (mm)

	DIM	S701	S703	S706	S712	S712S	S724	S724S	S748	S772
(H) Height incl. fan	mm	345					348		385	
(W) Width	mm	70					100		190	
(D) Depth incl. connector	mm	285							285	

S700 Servo Drives

Features

The S700 can read data from a wide range of feedback systems and evaluate three different systems in parallel. This ensures a high level of flexibility where integration the S700 into various applications is concerned. Control without a feedback system is also supported, e.g. in the case of asynchronous motors.



2 to 36-pin resolvers

Incremental encoder (AquadB) 24 V

Incremental encoder (AquadB) 24 V + hall-effect sensor

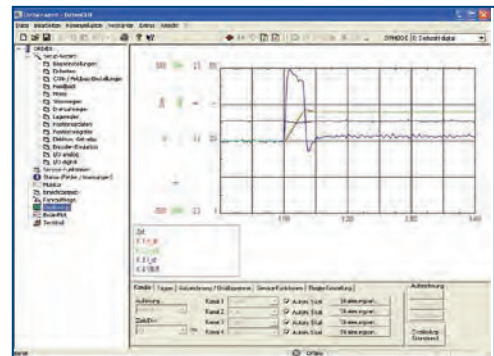
Pulse / direction, 24 V

Optional: SSI absolute encoder pulse / direction 5 V

- SinCos encoder with BiSS
- SinCos encoder with EnDat 2.2, EnDat 2.1
- SinCos encoder with HIPERFACE
- SinCos encoder without data track
- SinCos encoder with hall-effect sensors
- Hall-effect sensor
- Incremental encoder (AquadB) 5 V
- Incremental encoder (AquadB) 5 V + hall-effect sensor

Simple Configuration with DriveGUI Setup Software

With the graphic-based DriveGUI setup tool, you have access to all the S700 functions and parameters. You can therefore quickly configure all S700 interfaces, select all connected devices (e.g. motor type, feedback system, fieldbus) and the autotuning functions can be launched. The four-channel oscilloscope and Bode plot function ensure optimum display of the autotuning results.



Integrated Macro Programming

The Macro Language forms part of the S700 firmware and enables independent, single-axis programmable positioning. Missing functions in the standard amplifier firmware can be programmed with IEC 61131 structured text. The MacroStar development tool supports the quick programming of functions with integrated variables and command catalogs.

- 62.5 μ s / 250 μ s / 1 ms / 4 ms / 16 ms / IDLE / IRQ
- 128 kByte code memory
- 400 simple instructions every 62.5 μ s
- CAN objects for multi-axis control

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1 PROGRAM FUCALL
2 IF EXPRES = TRUE
3   EXPRES := NOT EXPRES
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5   PRINTTIME -> SPEEDSTEP -> SPEEDSTEP
6   PRINTTIME -> SPEEDSTEP -> SPEEDSTEP
7   PRINTTIME -> SPEEDSTEP -> SPEEDSTEP
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10  IF EXPRES = TRUE
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From a Drive to a Safe Drive: Safety Expansion Cards

The S700 safety concept is designed for level SIL3 or PL e. The use of standard hardware components enables flexible and cost-optimized solutions which can achieve a cost saving of up to 25% per axis due to the omission of customer-specific adjustments. Due to the secure processes, machine availability and, consequently, productivity increase by up to 20%.

The safety expansion cards equip the S700 with important safety functions that are activated by an external safety logic. The upgrade is very simple: The cards are simply inserted into the connector sockets provided on the S700 servo drive and then configured with the SafetyGUI configuration tool. Finished!

Extensive Safety Functions

Category	Function	S700	S700+S1-2	S700+S2-2
	Si level	SIL2/PL d	SIL3/PL e	SIL2/PL d
Safe stop functions	STO	✓	✓	✓
	SS1	—	✓	✓
	SS2	—	✓	✓
	SOS	—	✓	✓
Safe speed functions	SSR	—	✓	✓
	SLS	—	✓	✓
Safe direction functions	SDI	—	✓	✓
Safe brake control	SBC	—	✓	—
Safe position functions	SLI	—	✓	✓
	SLP	—	✓	—



Safety expansion card S2-2

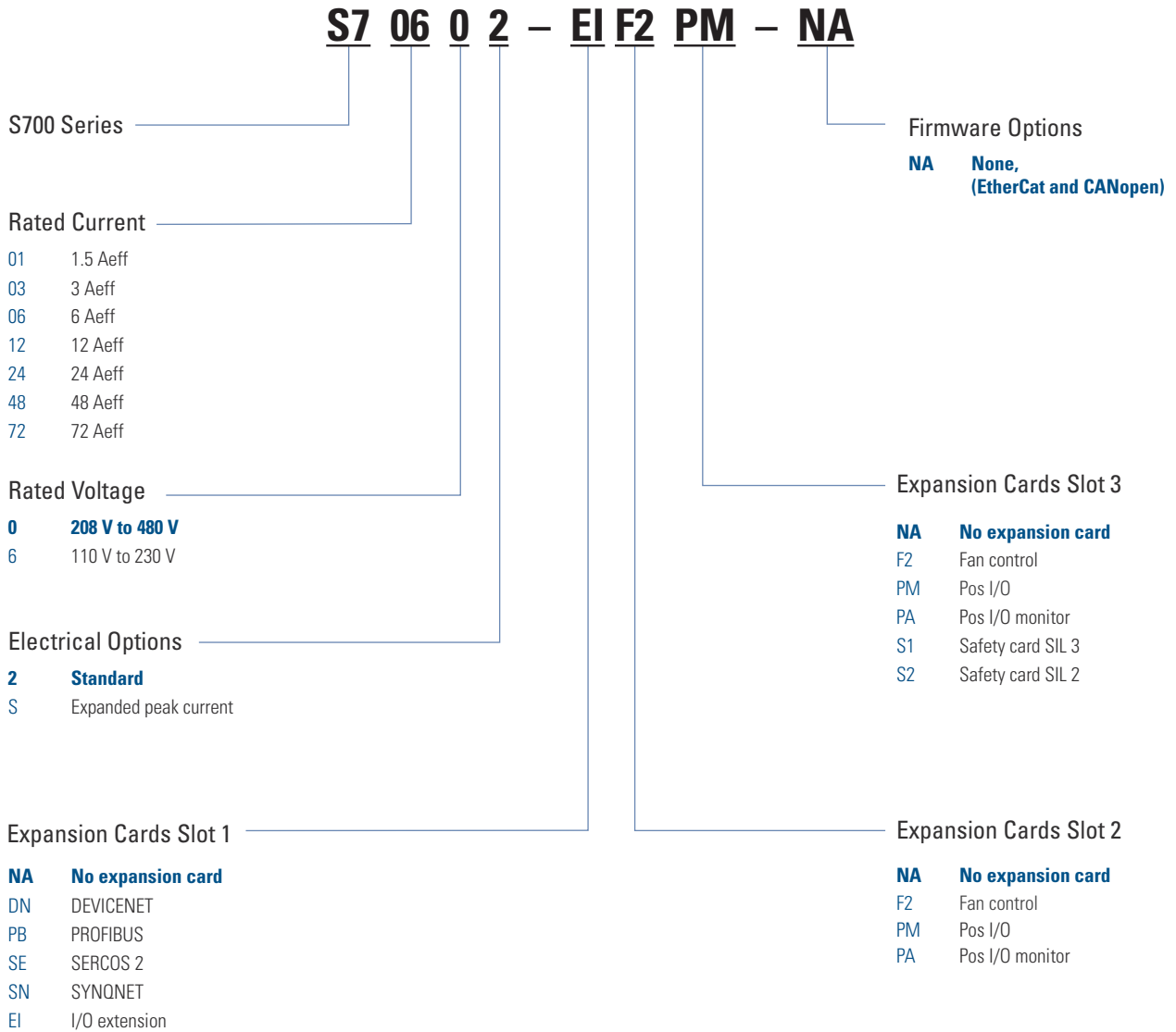
Safety expansion card S1-2

Safety Solutions with the S700 Safety Concept

- Easy integration
 - Hardwired, compatible with almost every safe control system
 - Ideal for upgrading existing safety solutions
 - No external safety logic necessary
- Flexible
 - Upgradeable option cards
- Maximum safety functionality
 - Extensive safety functions are included
 - Very short response time thanks to direct access to the control electronics

Model Nomenclature

S700 Servo Drive



Note: Options in blue type refer to standard products.