Stepper and Servo Motor Control Technology TP 1423

Position, Torque, and Speed Control Fundamentals



Highlights

- Modern, industrial components from Festo
- One controller for both motors
- Linear- and angular-axis, and gantry applications
- Free, professional configuration software
- Safe experimentation
- Courses on **Festo LX**
- Focus on troubleshooting and diagnosis

Stepper and servo motors are essential in industry for precise and controlled motion. They enable automation, accuracy, and efficiency in various industrial applications for increased productivity and competitiveness.

Automation and robotics specialists, as well as **industrial electricians**, and **electrical and maintenance technicians** work extensively with stepper and servo motors.

These skilled workers are responsible for tasks such as **motor installation, commissioning, maintenance, and troubleshooting**, ensuring the reliable and optimal operation.

The **new stepper and servo motor control courses** focus on teaching the fundamentals of position, speed, and torque control.

Safe, modular training packages allow learners to gain **hands-on experience** in the configuration of stepper motor and servo motor controls before engaging with complex, real-world applications.

Video → bit.ly/TP1423-video-en

01 Learners' safety is ensured by protective guards that prevent contact with moving parts.

02 A magnetic brake can be used to apply a load during speed control experiments.

03 An accessory on the carriage block helps visualize the effects of oscillation and vibration during travel along a linear axis.

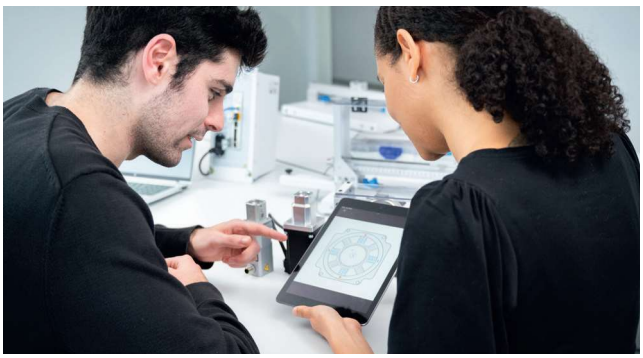
04 Two packages can be combined with an optional PLC and an add-on gantry kit to create a multi-axis application.

Build practical skills that can be applied quickly in the workplace, with the latest technology from Festo.

Instructors can select the course to cover either servo or stepper motors, or both. Each course corresponds to a training package that contains all necessary equipment to perform the learning activities.

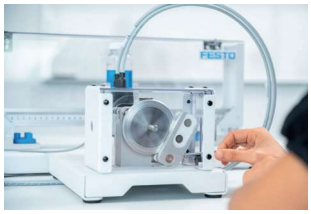
What learners can study:

- Stepper and/or servo motor working principles, construction, and applications
- Torque calculations and motor selection for specific tasks
- Drive configuration and commissioning
- Diagnostics and troubleshooting techniques
- Wiring and manual motor operation
- Homing and creating smooth motion trajectories
- Power transmission methods for angular and linear motion
- Advantages and limitations of different transmission methods
- Open- and closed-loop control using encoders and feedback devices
- PID control for position, speed, and torque
- Control strategies using a PLC for motor applications
- Control and coordination of multiple axes independently
- And more



01

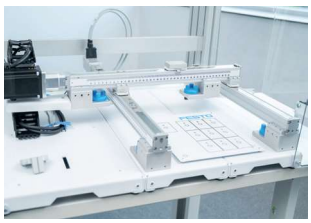




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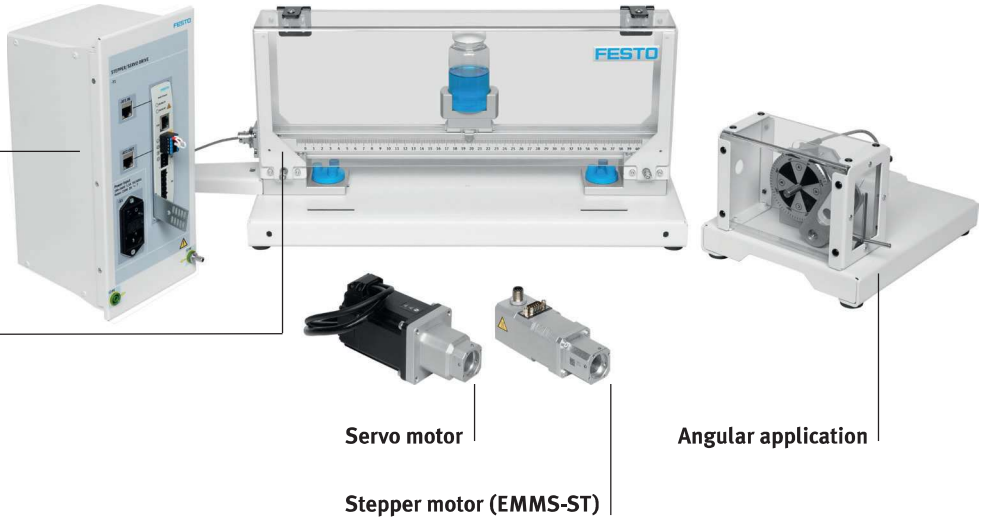


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A look at the training package "Stepper and servo motor control technology"

Stepper/Servo Controller (with the **CMMT-ST** Servo Drive) that can be configured and diagnosed with the free professional **Festo Automation Suite**

Linear application (with the **ELGC-BS** Ball Screw Linear Actuator)



For more details about TP 1423 Stepper and Servo Motor, TP 1422 Stepper Motor, or TP 1421 Servo Motor, contact a sales representative or an authorized dealer.

TP 1421 = Servo motor only

TP 1422 = Stepper motor only

TP 1423 = Servo & Stepper motor

DID1290 en 09/2023. Subject to change without notice.

Stepper and Servo Motor Control Technology TP 1423	**8200387**

The most important components at a glance:

1 Stepper and servo motor controller	8179953
2 Rotative-axis application	8180132
3 Linear-axis application	8191671
4 Stepper motor kit	8180475
5 Servo motor kit	8191670

Stepper Motor Control Technology TP 1422	**8200389**

The most important components at a glance:

Stepper and servo motor controller	8179953
Linear-axis application	8191671
Rotative-axis application	8180132
Stepper motor kit	8180475

Servo Motor Control Technology TP 1421	**8200388**

The most important components at a glance:

Stepper and servo motor controller	8179953
Linear-axis application	8191671
Rotative-axis application	8180132
Servo motor kit	8191670

To expand, also consider:

6 Adapter kit for TP 1410	8196774
Gantry application update kit	8197527
EduTrainer Universal with SIMATIC S7-1500 (S7-1512C-1PN) **or**	8065595
TP700, HMI Rack	8022729

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Recommended Learning Material

Workbooks (→ page 162)



Campus licenses:

en	8200982

Notes:The campus license includes the student and instructor versions of the workbooks “Stepper and Servo Motor Control”, “Stepper Motor Control”, and “Servo Motor Control”. Printed workbooks available upon request.

Courses on Festo LX

- → Stepper and Servo Motor Control
- → Stepper Motor Control
- → Servo Motor Control