ELGS-TB
Toothed belt axis unit

FESTO

Operating instruction

8174306
2022-04c
[8174308]

8174306

Translation of the original instructions

1 About this document

1.1 Applicable documents

All available documents for the product ➔ www.festo.com/sp.

Type	Product	Table of contents
EMCS-ST	Integrated drive	Manual
ELGC-TB	Toothed belt axis	Operating instruction
EAMM-A	Axial kit	Assembly instructions
NEFC-M12G8-0.3-M12G5-LK	Adapter	Assembly instructions

Tab. 1: Applicable documents for the product

1.2 Product version

This documentation refers to the following datasets:
– Firmware version of the integrated drive from "v19.0.4.107_release"
– IO-Link device description file (IODD) from V1.2.6
– Adapter NEFC from production date 01/2022
When using a different firmware version, check whether a corresponding version of the documentation is available ➔ www.festo.com/sp.

2 Safety

2.1 Safety instructions

– Observe labelling on the product.
– Before working on the product, switch off the power supply and secure it against being switched on again.
– Store the product in a cool, dry environment protected from UV and corrosion. Keep storage times short.
– Observe the tightening torques. Unless otherwise specified, the tolerance is ± 20%.

2.2 Intended use

The toothed belt axis unit ELGS-TB is intended for the linear movement of pay-loads or as a drive when external guides are used between two end positions. The toothed belt axis unit ELGS-TB is approved for slide operation.
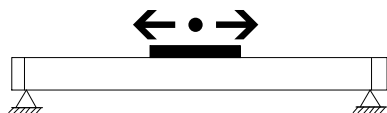

Fig. 1: Slide operation

2.3 Training of qualified personnel

Work on the product may only be carried out by qualified personnel who can evaluate the work and detect dangers. The qualified personnel have knowledge and experience in dealing with electric drive systems.

3 Additional information

– Contact the regional Festo contact if you have technical problems ➔ www.festo.com.
– Accessories and spare parts ➔ www.festo.com/catalogue.

4 Product overview

4.1 Scope of delivery

The following components are included in the scope of delivery:
– Toothed belt axis unit ELGS-TB
– Instruction manual for the toothed belt axis unit ELGS-TB
– Adapter for IO-Link operation (optional accessory)
  ➔ www.festo.com/catalogue

4.2 Function

The toothed belt axis unit converts the rotary motion of the mounted motor into a linear motion of the slide. The toothed belt drive converts the torque of the motor into a feed force. The linear movement of the slide is precisely guided by the guide.
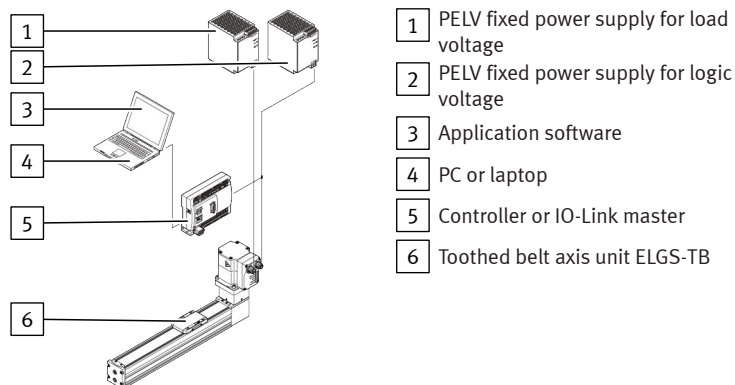
4.3 System overview

1	PELV fixed power supply for load voltage
2	PELV fixed power supply for logic voltage
3	Application software
4	PC or laptop
5	Controller or IO-Link master
6	Toothed belt axis unit ELGS-TB

Fig. 2: System overview ELGS-TB

ⓘ

Items 1 … 5 are not included in the scope of delivery.

4.3.1 Product design

1	Sealing air connection
2	Toothed belt axis ELGC-TB
3	Product labelling
4	Axial kit EAMM
5	Integrated drive EMCS-ST
6	Warning symbol "Attention! Hot surface"
7	Controller housing
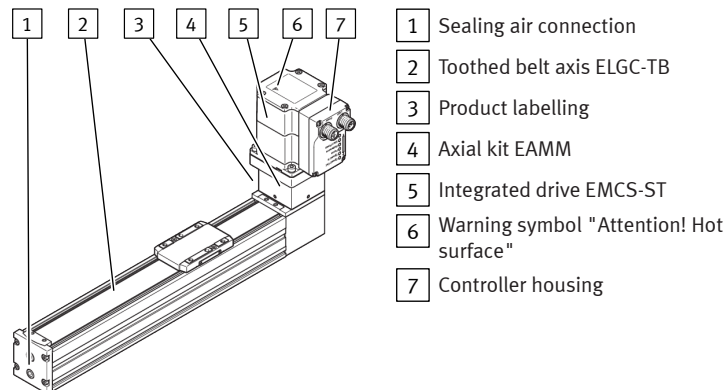
Fig. 3: Product design ELGS-TB

Electrical connections, display and operating components (HMI)

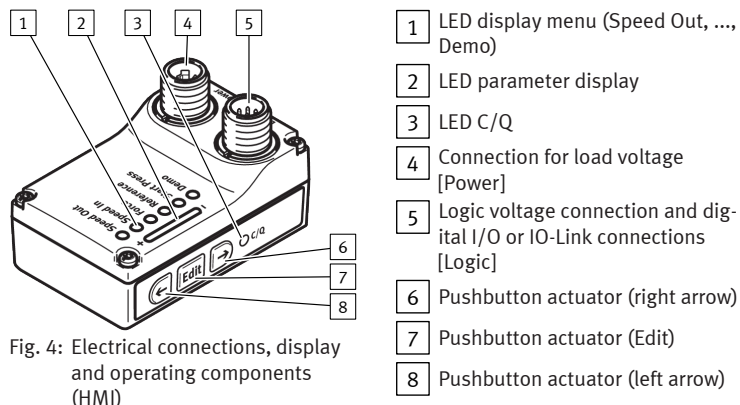|	
1	LED display menu (Speed Out, …, Demo)
2	LED parameter display
3	LED C/Q
4	Connection for load voltage [Power]
5	Logic voltage connection and digital I/O or IO-Link connections [Logic]
6	Pushbutton actuator (right arrow)
7	Pushbutton actuator (Edit)
8	Pushbutton actuator (left arrow)

Fig. 4: Electrical connections, display and operating components (HMI)

5 Transport

NOTICE

Unexpected and unbraked movement of components
• Secure moving components for transport.

1. Take product weight into account ➔ 13 Technical data.
2. Maintain support clearance ≤ 300 mm when attaching transportation aids.

6 Assembly

> ⚠ **WARNING**
>
> **Risk of injury due to unexpected movement of components.**
> The drive can move freely in the voltage-free state. This can cause unexpected movements of the connected mechanics and crush parts of the body.
> • Bring moving parts of the mechanical system into a safe position.

• Mount product ➔ "Toothed belt axis ELGC-TB" instruction manual ➔ www.festo.com/sp.

7 Installation

> ⚠ **WARNING**
>
> **Risk of injury due to electric shock.**
> • For the electrical power supply with extra-low voltages, use only PELV circuits that guarantee a reinforced isolation from the mains network.
> • Observe IEC 60204-1/EN 60204-1.

> ℹ
>
> **Damage to the device due to non-approved potentials at the pins**
> • Power connection:
>   • Do not connect pin 3
> • Logic connection:
>   • EMCS-ST is not hot-pluggable. Only after connection of the reference potentials GND/L– [Pin 4/8] can 24 V levels be applied to digital outputs DO1/DO2 [Pin 2/3] or the IO-Link communication signal C/Q [Pin 3].
>   • The DO1/DO2 [Pin 2/3] digital outputs and the IO-Link C/Q [Pin 3] communication signal must be disconnected 100 ms before the power supply connections GND/L– [Pin 4/8] and 24 V DC/L + [Pin 1], e.g. by the interposition of relay contacts.
> • GND and L– connections:
>   • The Power, GND [Pin 2] and Logic, GND/L– [Pin 4/8] connections must have the same potential.

1. Connect cables to the [Logic] and [Power] connections of the integrated drive EMCS-ST.
2. Connect cables to the controller or IO-Link master and to the PELV fixed power supply units.

Wiring diagram: DIO operation (digital I/O)

> ℹ

In NPN mode defined levels must be applied to the DI1/DI2 digital inputs of the EMCS, e.g. by controller outputs with pull-up resistors (4.3 kΩ recommended).
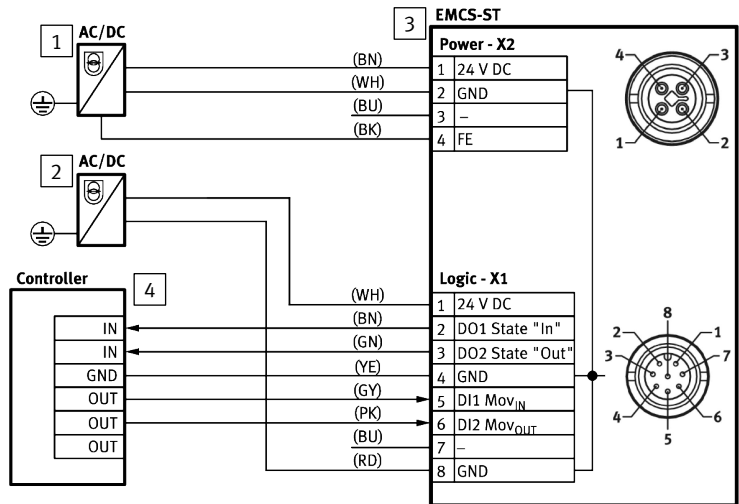
Fig. 5: Wiring diagram: DIO operation (digital I/O)

1	PELV fixed power supply for the load voltage supply	3	Integrated drive EMCS-ST
2	PELV fixed power supply for the logic power supply	4	Higher-level controller with digital I/O

Status and control signals

The following table shows the status and control signals and the electrical levels of the digital inputs and outputs as a function of the "PNP/NPN" version of the integrated drive.

Status and control signal	Electrical levels	
	PNP, positive logic	NPN, negative logic
0	Low level (0 V)	High level (24 V)
1	High level (24 V)	Low level (0 V)

Tab. 2: Overview of status and control signals as a function of electrical levels

Wiring diagram: IO-Link operation

> ℹ

Current consumption of IO-Link power supply [Logic]
An input current at pin 1 (L+) of 100 … 150 mA is required for operation.

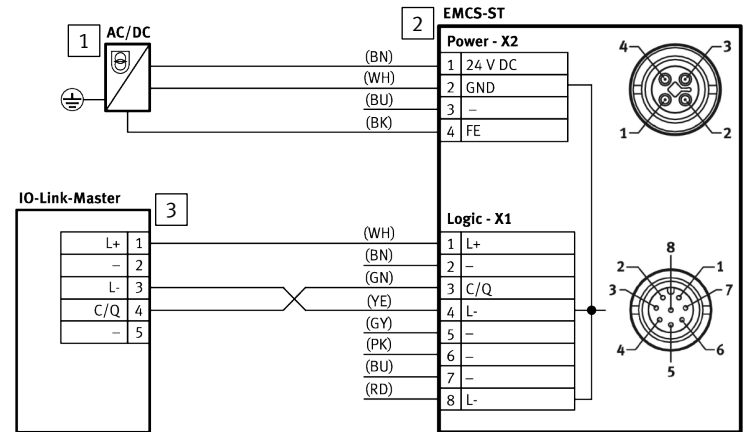**Connecting IO-Link directly to the master**

Fig.6

1	PELV fixed power supply for the load voltage supply	3	IO-Link master with IO-Link interface, port class A
2	Integrated drive EMCS-ST		

Connecting IO-Link to the master via the NEFC adapter

> ℹ

Adapter NEFC up to production date 2021
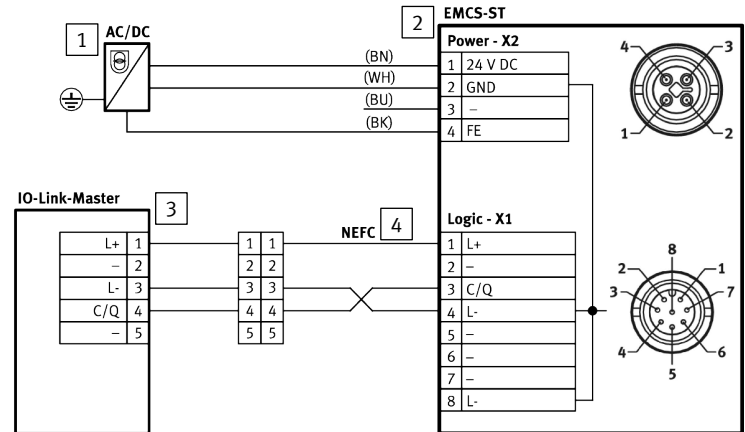NEFC adapters up to production date 2021 can only be used for IO-Link masters with port class A.

Fig. 7: Wiring diagram: IO-Link operation with adapter, example of port class A

1	PELV fixed power supply for the load voltage supply	3	IO-Link master with IO-Link interface, port class A and B
2	Integrated drive EMCS-ST	4	Adapter NEFC

> ℹ

Core colours of Festo cables:
BK = black, BN = brown, BU = blue, GN = green, GY = grey, PK = pink, WH = white, YE = yellow

8 Commissioning

> ⚠ **WARNING**
>
> **Risk of injury due to unexpected movement of components.**
> • Protect the positioning range from unwanted intervention.
> • Keep foreign objects out of the positioning range.
> • Perform commissioning with low dynamic response.

> ⚠ **WARNING**
>
> **Severe, irreversible injuries from accidental movements of the connected actuator technology.**
> Unintentional movements of the connected actuator technology can result from exchanging the connecting cables of a servo drive or between servo drives.
> • Before commissioning: All cables must be correctly assigned and connected.

> ⚠ **WARNING**
>
> **Danger of burns from hot housing surfaces.**
> Metallic housing parts can reach high temperatures during operation.
> Contact with metal housing parts can cause burn injuries.
> - Do not touch metallic housing parts.
> - After the power supply is switched off, let the device cool down to room temperature.

> **i**
>
> **Updating device data (only via IO-Link)**
> - Firmware update
> - Updating parameter set
> - Data backup (Data Storage)
> ➔ "Integrated drive EMCS" instruction manual ➔ www.festo.com/sp

8.1 Commissioning: DIO operation (digital I/Os)

Preparation:

1. Check mounting of the drive system.
2. Check wiring of the power supplies and the "DI/DO" digital inputs and outputs at the [Power] and [Logic] connections.

Procedure:

1. Switch on load voltage.
2. Switch on logic voltage (switch-on delay ≥50 ms required). If the logic voltage is switched on before the load voltage, the EMCS-ST starts with an error that must be acknowledged.
3. Wait for initialisation until C/Q LED is yellow (≈ 7 s).
4. Select the reference end position "Ref" from the HMI interface in the "Reference" menu and start the homing with end position detection (only required if the reference end position "Ref" is different from the factory setting or if the useful range has been changed). The drive system is referenced after a successful homing.

   > **i**
   >
   > Referencing sets the start press position "$Pos_{Start Press}$" equal to the calculated useful range.

5. Parameterise operating modes via HMI interface:
   Basic parameters for point-to-point operation with and without press function or manual operation (demo)
   - Velocity "Speed Out"
   - Velocity "Speed In"
   additional parameters for point-to-point operation with press function
   - "Force"
   - Start Press "$Pos_{Start Press}$" position (reference point end position "Ref")

The EMCS-ST is then ready for operation and the application can be controlled via the "DI/DO" digital inputs and outputs ➔ 9.6 Point-to-point operating modes.

8.2 Commissioning: IO-Link operation

Preparation

1. Check mounting of the drive system.
2. Check the wiring of the power supplies and the IO-Link "C/Q" interface at the [Power] and [Logic] connections.

Procedure

1. Switch on load voltage.
2. Switch on logic voltage via IO-Link master (switch-on delay ≥50 ms required). If the logic voltage is switched on before the load voltage, the EMCS-ST starts with an error that must be acknowledged.
3. Wait for initialisation until C/Q LED is yellow (≈ 7 s).
4. Select the reference end position "Ref" from the IO-Link device data (0x0103.0, reference) and start the homing with end position detection (0x0104.0, Execute "Reference" Movement) (only required if the reference end position Ref" is different from the factory setting or if the useful range has been changed). The drive system is referenced after a successful homing.

   > **i**
   >
   > Homing sets the "Pos_{Imp}" intermediate position and the "$Pos_{Start Press}$" start press position equal to the determined useful range.

5. Parameterise operating modes via IO-Link interface:
   Basic parameters for point-to-point operation with and without press function or manual operation (demo)
   - 0x0100.0, velocity "Speed In"
   - 0x0101.0: velocity "Speed Out"
   - 0x0106.0, end position "Out" "Lim_{Out}" (reference point reference end position "Ref")
   - 0x0108.0, intermediate position "Pos_{Imp}" (reference point reference end position "Ref")
   additional parameters for point-to-point operation with press function
   - 0x0102.0, Force "Force"
   - 0x0105.0, start press position "$Pos_{Start Press}$" (reference point reference end position "Ref")

Then the EMCS-ST is ready for operation and the application can be controlled via the IO-Link interface "process data 0x0029.1, 0x0029.2 and 0x0029.5" or "system parameter 0x0002" ➔ 9.6 Point-to-point operating modes.

9 Operation

> ⚠ **WARNING**
>
> **Danger of burns from hot housing surfaces.**
> Metallic housing parts can reach high temperatures during operation.
> Contact with metal housing parts can cause burn injuries.
> - Do not touch metallic housing parts.
> - After the power supply is switched off, let the device cool down to room temperature.

9.1 Master control

- Lowest priority: DIO operation (after Power ON and initialisation)
- Medium priority: IO-Link operation (after established IO-Link communication)
- Highest priority: HMI operation (unlocked pushbuttons)

9.2 Dimension reference system

The correct positioning of the drive requires a defined dimension reference system.

Linear drive system

Ref ⊕: reference end position (reference point for Lim_{In}, Lim_{Out}, Pos_{Act}, Pos_{Imp} and $Pos_{Start Press}$)
- motor facing (default)
- motor facing away
Lim_{In}/Lim_{Out}][: end positions
$Mech_{In}$/$Mech_{Out}$: mechanical stops
Pos_{Act} ⊕: current position
Pos_{Imp}: intermediate position (IO-Link only)
$Pos_{Start Press}$: Start Press position
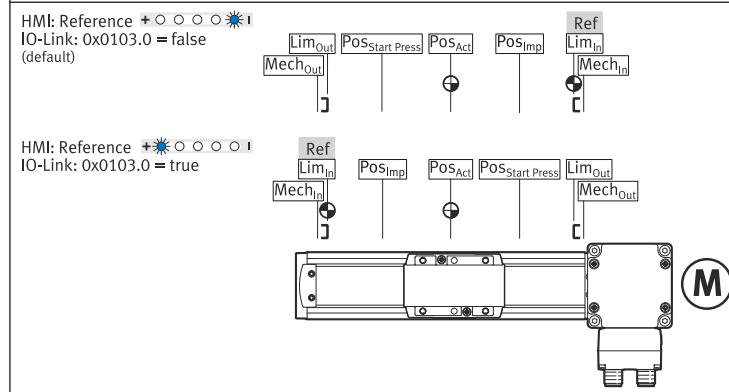
Tab. 3: Dimension reference system for linear drive systems

9.3 Restart with homing

Re-initialise reference end position "Ref"
The referencing of the reference end position is lost on Power OFF of the logic voltage L+ [Logic, Pin 1]. After every restart the position of the reference end position "Ref" is re-initialised at the "Speed Ref" velocity with the first motion task.

Homing after a restart as a function of the positioning task

Sequence

– Mov_{Ref}: force-controlled movement $Ctrl_F$➔ against mechanical stop "$Mech_{In}$"
– Mov_{Out}: position-controlled movement $Ctrl_P$⇒ to the reference end position "Ref"
– Travel to the target position as a function of the positioning task
  – No travel, end position "Lim_{In}" reached
  – Mov_{Out}: position-controlled movement $Ctrl_P$⇒ to the end position Lim_{Out}
  – Mov_{Imp}: position-controlled travel $Ctrl_P$⇒ to the intermediate position Lim_{Imp} (IO-Link only)
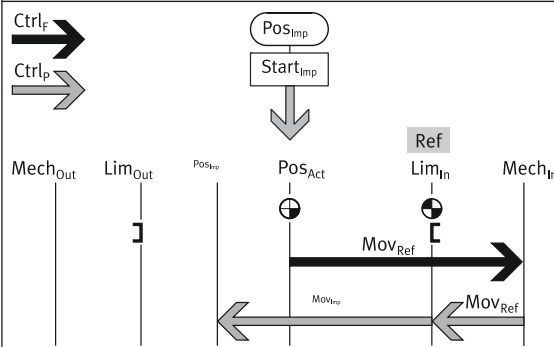
$Start_{In}$ positioning task to the end position Lim_{In}
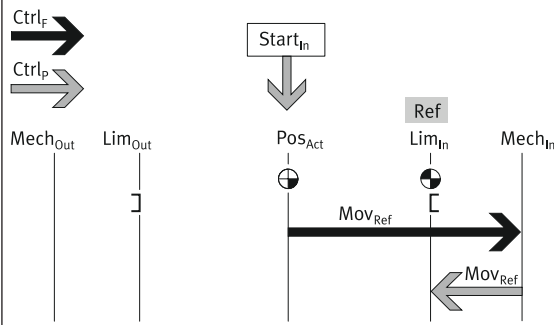
$Start_{Out}$ positioning task to the end position Lim_{Out}
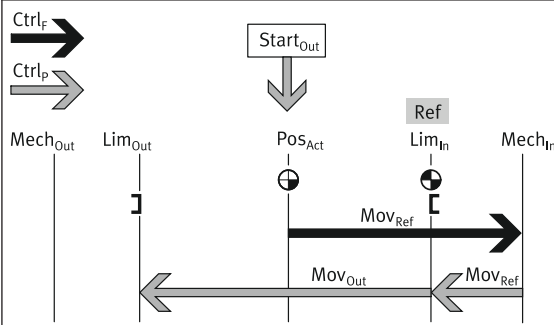
$Start_{Imp}$ positioning task to the intermediate position Pos_{Imp} (IO-Link only)

Tab. 4: Initialise restart sequence with reference end position "Ref"

9.4 Display and operating components (HMI)

The display and operating components (HMI) can be used to perform the following functions in the HMI menu:

– Unlock pushbutton actuators (Unlock HMI), press and hold for 3 s `Edit` — an active positioning task in DIO or IO-Link mode is stopped
(Condition for IO-Link operation: IO-Link parameter 0x000C.4 = false)
– Select menu function with pushbutton actuators ← → (selecting menu), press `Edit`
– Parameterise Speed Out, Speed In and Force setpoint values
(Set value: 10, 20, ..., 100% of the maximum value ➔ 13 Technical data) and save (Save), press `Edit`
– Parameterise the position of the reference end position "Ref" (Set Ref) and run the referencing movement Mov_{Ref} ($Start_{Ref}$: Pos_{Act} ➔ Lim_{In} ➔ Lim_{Out}), press `Edit`
– Run Start Press movement (Start/Stop) and save Start Press Position $Pos_{Start Press}$ (Save), press `Edit`
– Execute demo run (Start/Stop)
– Lock pushbutton actuators (Lock HMI), press and hold for 3 s `Edit` or no pushbutton actuator input for 15 s
– To acknowledge an error, press and hold `Edit` for 3 s
– Reset to factory settings, press ←, `Edit` and → simultaneously for 10 s and then carry out a Power OFF/ON on the logic power supply 24 V DC [pin 1].

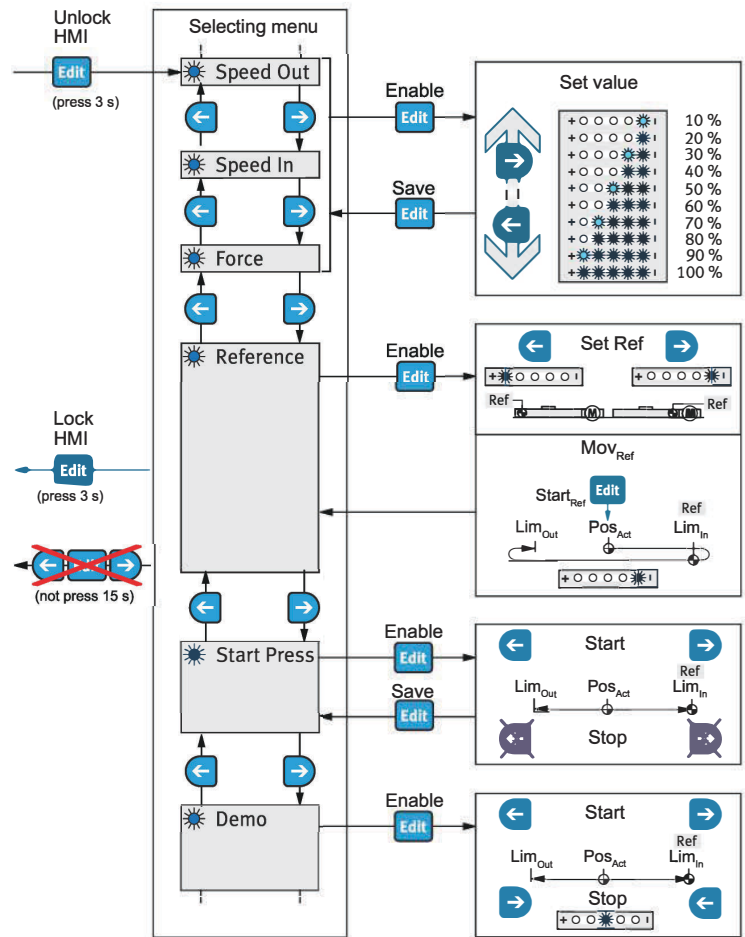Fig. 8: HMI menu

9.5 Homing with end position determination

⚠ WARNING

Risk of injury due to unexpected movement of components.
When starting the homing run, the drive is disconnected from the power supply for a short time. This can cause unexpected movements of the connected mechanics and crush parts of the body.
• Bring moving parts of the connected mechanical system into a safe position.

i

• Referencing with end position determination is only required again if the reference end position "Ref" or the useful range needs to be changed.
• During referencing with end position determination the intermediate position Pos_{Imp} and the start press position $Pos_{Start Press}$ is set equal to the new end position Lim_{Out}.

During referencing with end position determination the positions of the mechanical stops $Mech_{In}$/$Mech_{Out}$ are recorded in order to calculate the end positions Lim_{In} ("Ref")/Lim_{Out} for the dimension reference system.
Before running referencing with end position determination to a new reference end position "Ref", the drive is de-energised for a required re-initialisation. Then the power is restored and the process is started.

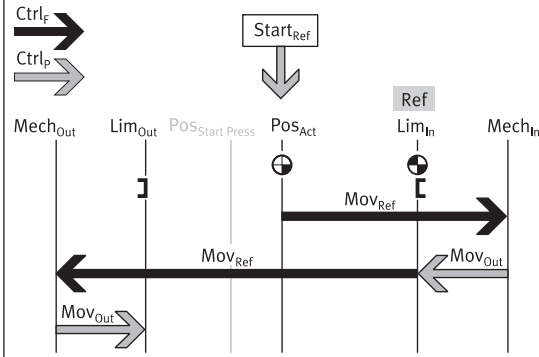## Activate referencing with end position determination Start_Ref

Factory setting: motor-facing reference end position "Ref"
– HMI: activate "Reference" menu, parameterise reference end position "Ref" and initiate referencing movement ➔ 9.4 Display and operating components (HMI)   – IO-Link, process data: parameterise reference end position "Ref" 0x0103.0, false (factory setting) or true and initiate referencing movement 0x0104.0 = true   – IO-Link, system parameters: 0x0002, value = 0xCE (Execute "Reference" Movement (False), factory setting) or value = 0xCF (Execute "Reference" Movement (True))

Sequence
The diagram shows the referencing movements with end position determination   – Mov_Ref: force-controlled movement Ctrl_F ➔ against mechanical stop "Mech_In"   – Mov_Out: position-controlled movement Ctrl_P ➔ to the reference end position "Ref"   – Mov_Ref: force-controlled movement Ctrl_F ➔ against the mechanical stop "Mech_Out"   – Mov_Out: position-controlled movement Ctrl_P ➔ to the end position Lim_Out

Tab. 5: Initialise referencing sequence with reference end position "Ref" and end position determination

9.6 Point-to-point operating modes

ℹ️

Automatic saving of device data

If automatic storage is activated (0x0109.0 = true, default), parameter changes in the device data (= data storage parameters ➔ "Integrated drive EMCS" instruction manual ➔ www.festo.com/sp) are made automatically and permanently saved in the flash memory. Exceeding the maximum permissible 100,000 write cycles results in irreparable damage to the flash memory and the device, e.g. when using the device for positioning tasks via IO-Link.

If automatic saving is deactivated (0x0109.0 = false), parameter changes are only temporarily stored in the RAM. The RAM permits an unlimited number of parameter changes, e.g. for positioning tasks via IO-Link.

For single point-to-point operation the drive can be traversed to the target positions "end positions "Lim_In/Lim_Out and intermediate positions Pos_Imp" (IO-Link only).

Point-to-point operation

Parameterise point-to-point operation
HMI: – Speed Out, Speed In, Force and Start Press ➔ 9.4 Display and operating components (HMI)   IO-Link (acyclic device data):   – Velocity Speed Out: 0x0101.0, Speed Out[1]   – Velocity Speed In: 0x0100.0, Speed In[1]   – Force/Torque: 0x0102.0, Force[1][2]   – Start Press Position Pos_Start Press: 0x0105.0, Position Start Press [mm][2][3][4]   – End position Lim_Out: 0x0106.0, end position Out [mm][4]   – Intermediate position Pos_Imp: 0x0108.0, Intermediate Position [mm][3][4]

Control point-to-point operation via digital inputs		
Positioning task	Control signals	
	Mov_In DI1 [Logic, Pin 5]	Mov_Out DI2 [Logic, Pin 6]
Start_In/Mov_In	1	0
Start_Out/Mov_Out	0	1
Stop[5]	0	0
Switch off power stage[6]	1	1

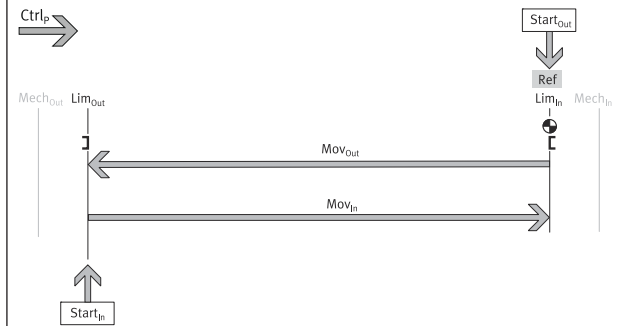| Control point-to-point operation via IO-Link				
Positioning task	Process parameters			System parameters
	Move "In"	Move "Out"	Move "Inter-mediate"	System commands
	0x0029.1	0x0029.2	0x0029.5	0x0002
Start_In/Mov_In	true	false	false	= 0xC8, Execute "Move_In"
Start_Out/Mov_Out	false	true	false	== 0xC9, Execute "Move_Out"
Start_Imp/Mov_Imp	false	false	true	= 0xD0, Execute "Move_Intermediate"
Stop[5]	false	false	false	= 0xCA, stop motion
Switch off power stage[6]	≥ 2 x true			= 0xCB, disable power stage

Point-to-point operation

| Sequence |
| --- |
| The diagrams show the movements in point-to-point operation
 – Mov_Out: position-controlled movement Ctrl_P ➔ to the end position "Lim_Out"
 – Mov_In: position-controlled movement Ctrl_P ➔ to the end position "Lim_In"
 – Mov_Imp: position-controlled movement Ctrl_P ➔ to the intermediate position "Pos_Imp"
 – Point-to-point operation with press function, from Start Press Position "Pos_Start Press"
  – Mov_Out: force-controlled movement Ctrl_F ➔ until the parameterised force or torque setpoint value "Force" is reached or to the end position "Lim_Out"
  – Mov_Imp: force-controlled movement Ctrl_F ➔ to the intermediate position "Pos_Imp" (IO-Link only) |

Simple point-to-point operation

Simple point-to-point operation with intermediate position (IO-Link only)
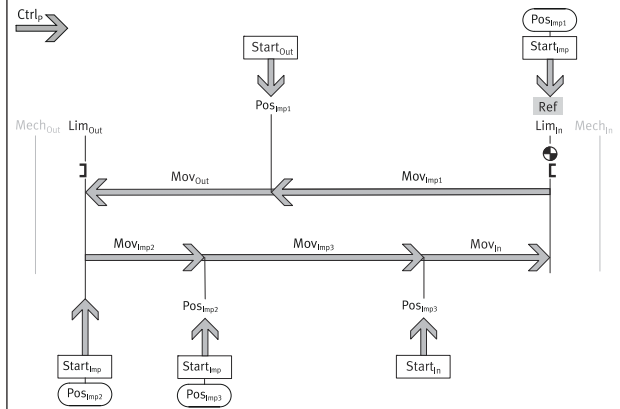
Point-to-point operation with press function
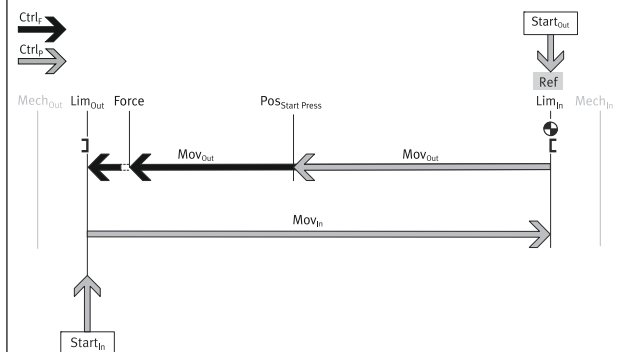
Point-to-point operation with press function and intermediate position (IO-Link only)
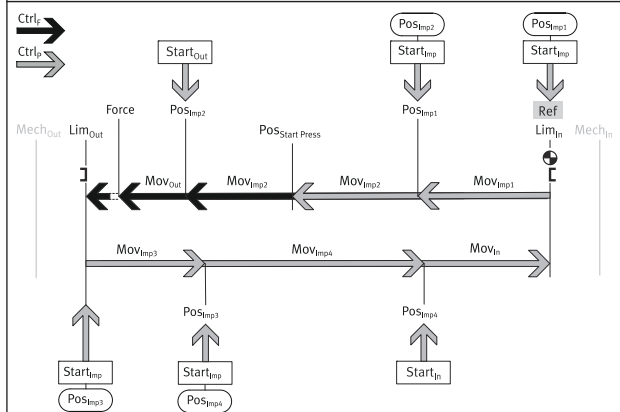
1) 10, 20, ..., 100% of maximum value
2) Only required for point-to-point operation with press function
3) Reset at every referencing
4) Reference point: reference end position "Ref"
5) The output stage remains active, the drive decelerates to standstill and remains stationary position-controlled.
6) In error-free status the power stage is switched off after 3 s, the drive coasts to a standstill and remains stationary unregulated.

Tab. 6: Parameterise and control point-to-point operation

10 Malfunctions

Acknowledge error

With error acknowledgment, active error messages are deleted from the diagnostic memory if the cause of the error was remedied before acknowledgment.

Errors can be acknowledged via the following interfaces:
– Restart:
  – Logic voltage L+, Power OFF/ON [Logic, Pin 1]
– HMI:
  – Press and hold Edit for 3 s
– DIO, digital inputs:
  – DI1 "Mov$_{In}$" and DI2 "Mov$_{Out}$" = 1 [Logic, Pin 5/6]
– IO-Link, device data:
  – 0x0107.0 Quit Error = true
– IO-Link, process data:
  – 0x0029.3 Quit Error = true
  – 0x0029.1 and 0x0029.2 = true, 0x0029.5 = any

Diagnostic messages and fault clearance

"Information, Warnings and Errors" diagnostic messages are displayed by the C/Q LED and menu and parameters LED displays.

Errors are reported to the controller as follows:
– DIO operation: output signals DO1 and DO2 = 1 [Logic, Pin 2/3]
– IO-Link operation: ProcessDataInput state "In" (0x0028.1) and state "Out" (0x0028.2) = true
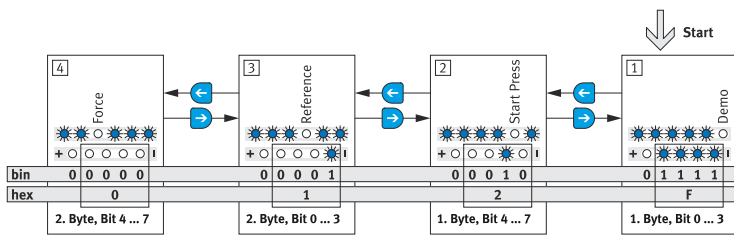
i

The first error that occurred is always displayed.

Fig. 9: Display of diagnostic messages (example)

Error code	Description	LED	LED displays		Event code
hex (dec)		C/Q	Menu	Parameter	(IO-Link)
Warning					
–	Warnings[1]	☀ yellow light	–		0x...
Errors					
–	Common device error or unlisted errors	● red light	...		0x1000
	Remedy – Contact Festo				
0x000F (15)	I²t monitoring output stage error limit		Demo / Start Press / Reference / Force		0x1805
	Remedy				
0x0016 (22)	Undervoltage in logic supply 24 V[2]		Demo / Start Press / Reference / Force		0x1804
	Remedy – Check logic voltage supply				
0x0017 (23)	Overvoltage in logic supply 24 V		Demo / Start Press / Reference / Force		0x1803
	Remedy – Check logic voltage supply				
0x001F (31)	Undervoltage in intermediate circuit		Demo / Start Press / Reference / Force		0x1806
	Remedy – Check the load voltage supply – Check power socket for contamination				
0x0026 (38)	Undervoltage in load supply 24 V		Demo / Start Press / Reference / Force		0x1802
	Remedy – Check the load voltage supply – Check power socket for contamination				
0x0027 (39)	Overvoltage load supply 24 V		Demo / Start Press / Reference / Force		0x1801
	Remedy – Check the load voltage supply				
0x0031 (49)	Temperature in device too low		Demo / Start Press / Reference / Force		0x4000
	Remedy – Check ambient conditions				

Error code	Description	LED	LED displays		Event code
hex (dec)		C/Q	Menu	Parameter	(IO-Link)
0x0033 (51)	Temperature in device too high		Demo / Start Press / Reference / Force		0x4000
	Remedy – Check ambient conditions – Check installation conditions				
0x012F (303)	IO-Link connection interrupted IO-Link connection interrupted		Demo / Start Press / Reference / Force		–
	Remedy – Check power supply – Check IO-Link master				

1) Additional information ➜ Instruction manual for integrated drive EMCS-ST
2) This error can only be acknowledged by a restart.

Tab. 7: "Information, Warnings and Errors" diagnostic messages

10.1 Repair

The product can be repaired or maintained.
– Spare parts and accessories ➜ www.festo.com/spareparts.
– Replace with an identical product ➜ www.festo.com/catalogue.

11 Replacement

Replace drive system

1. Save the application parameters to the IO-Link master ➜ "Integrated drive EMCS" instruction manual ➜ www.festo.com/sp.
2. Dismantle the defective drive system ➜ 12 Demounting.
3. Mount the new drive system ➜ 6 Assembly.
4. Connect the drive system ➜ 7 Installation.
5. Commission the drive system ➜ 8 Commissioning.
6. Update the firmware ➜ "Integrated drive EMCS" instruction manual ➜ www.festo.com/sp.
7. Check the current status of the application data ➜ "Integrated drive EMCS" instruction manual ➜ www.festo.com/sp.

Replace drive or integrated drive EMCS ➜ "Integrated drive EMCS" instruction manual ➜ www.festo.com/sp.

12 Demounting

⚠ **WARNING**

Unexpected movement of components.
Injury due to impacts or crushing.
• Before working on the product, switch off the control and secure it to prevent it from being switched back on accidentally.

⚠ **WARNING**

Risk of Injury due to Unexpected Movement of Components
For vertical or slanted mounting position: when power is off, moving parts can travel or fall uncontrolled into the lower end position.
• Bring moving parts of the product into a safe end position or secure them against falling.

Demount drive system

1. Allow the product to cool down to room temperature.
2. Disconnect electrical installations.
3. Remove the mounted attachment component.
4. Remove the attached accessories.
5. Remove the mounting attachments.
6. Observe transport information ➜ 5 Transport.

Remove drive or integrated drive EMCS ➜ "Integrated drive EMCS" instruction manual ➜ www.festo.com/sp.

13 Technical data

Additional information ➜ www.festo.com/catalogue.

Size		45	60
Mounting position		horizontal	
Ambient temperature	[°C]	0 … +50	
Storage temperature	[°C]	−20 … +60	
Degree of protection		IP40	
EMCS-ST: Certificates, declaration of conformity		➔ www.festo.com/sp	
Max. payload			
– horizontal mounting position	[kg]	2.5	4.0
Max. velocity[1]	[mm/s]	1200[2]	1300[3]
Velocity "Speed Press"[4]	[mm/s]	24	26
Max. feed force[5][6]	[N]	75	65
Max. force on external stops during homing[7]	[N]	84	142
Max. acceleration/deceleration[4]	[m/s²]	6	
Duty cycle	[%]	100 (+30 … +50 °C: − 2% per Kelvin)	
Distance between stop and end position[8][9]	[mm]	3	2
Repetition accuracy	[mm]	±0.1	±0.1
Nominal voltage	[V DC]	24	
Logic current consumption (logic, pin 1)	[mA]	DIO operation: 100 … 300 IO-Link operation: 100 … 150	
Load current consumption (power, pin 1)	[A]	5.3	5.3
IO-Link port class		A	
IO-Link protocol version		Device V 1.1	

1) Maximum value for Speed In/Speed Out at level 10
2) Can only be achieved from a stroke of 300 mm.
3) Can only be achieved from a stroke of 500 mm.
4) Unchangeable parameter.
5) Maximum value for Force at level 10
6) Force is controlled and evaluated by closed-loop control of the motor current. Depending on the mechanism of the drive, a linear force can be calculated from the measured level of current. The target is set as a percentage of the rated motor current and may deviate from the actual force on the axis. At the lower force levels the frictional force of the drive system may be greater than the set feed force and may result in the drive system coming to a standstill.
7) The force acts on the stop for ≤100 ms
8) Distance (MechIn – LimIn or MechOut – LimOut)
9) The specified value can deviate due to the elasticity of the toothed belt.

Tab. 8: Technical data ELGS-TB