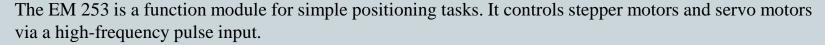
### **EM 253 POSITIONING MODULE**

#### Overview

- Function modules for simple positioning tasks (1 axis)
- Stepper motors and servo motors from the Micro Stepper to the high-performance servo drive can be connected
- Flexible connection possibilities
- Full support from STEP 7-Micro/WIN with parameterization and startup





### Design

The EM 253 positioning module is mounted in the same manner as an expansion module and connected to the S7-200 expansion bus via the integrated connection cable. The configuration data are read out of the CPU automatically on connection.

The integrated inputs/outputs are connected via removable terminal blocks.

The module has the following features:

- 5 digital inputs for signals from the process
- 24 pulse outputs for direct activation of the drive (forwards/backwards or speed/direction)
- 2 control outputs (DIS; CLR).
- 12 status LEDs



#### **Function**

- Variable output frequency 12 to 200,000 Hz for controlling the axis
- Flexible output interface:
  - 5 V DC or RS 422
- Absolute traverse:

Traverse the axis to a specified absolute position.

- Relative traverse:
  - Traverse the axis by a relative distance.
- Manual traverse:
  - Manual traversing of the axis, jog mode.
- Continuous control
- Max. 25 positioning profiles each with up to 4 speed changes can be loaded
- Integrated smoothing function for stepless changeover between 2 speeds (S Curve, jerk limitation)
- Backlash compensation for changes in direction
- Reference point approach (selection from 4 different modes)

### Configuring

The EM 253 is configured using STEP 7-Micro/WIN V3.2. The integrated Wizard supports

- Convenient parameterization of the bus parameters, e.g.,
  - Number of pulses per revolution
  - Units for distance measurement, e.g., mm, degrees, etc.
- Creation of the traversing profiles
- Definition of the reference search mode

Effective support is also provided by the comprehensive commentary and a context-sensitive online Help. The respective command set is automatically generated following configuration and can be used in the PLC project without any restrictions.

### **Commissioning**

A special startup tool is provided in STEP 7-Micro/WIN for easy startup. It supports, for example:

- Status monitoring
- Parameter optimization without program modifications
- Fine adjustment and system optimization
- Transfer of modified parameters (teach-in mode)
- With these functions, startup is completed in the shortest possible time.

### **Technical specifications**

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	6ES7 253-1AA22-0XA0
Supply voltage	
permissible range, lower limit (DC)	11 V
permissible range, upper limit (DC)	30 V
Input current	
from backplane bus 5 V DC, max.	190 mA
from supply voltage L+, max.	300 mA; from 12 V DC, 130 mA from 24
	V DC
Hardware configuration	
Number of modules per CPU	max. 5 with CPU 226/226XM, max. 3
	with CPU 224, max. 1 with CPU 222
Digital inputs	
Number/binary inputs	5
Type	IEC Type 1, active-high
Functions	Stop (STP), reference point switch (RPS),
	upper limit switch (LMT+), lower limit

	switch (LMT-), zero point (ZP)
Input voltage	
•Rated value, DC	24 V
•for signal "0"	STP, RPS, LMT+, LMT- DC 5 V; ZP DC 1 V
•for signal "1"	STP, RPS, LMT+, LMT- DC 15 V; ZP DC 3 V
Input delay (for rated value of input voltage	
•for standard inputs	
	Yes; STP, RPS, LMT+, LMT- 0.2 to 12.8
<ul> <li>Parameterizable</li> </ul>	ms; ZP min 2 µs
Cable length	
•Cable length, shielded, max.	100 m; STP, RPS, LMT+, LMT- 100 m, ZP 10 m
•Cable length unshielded, max.	30 m; STP, RPS, LMT+, LMT- 30 m, ZP not recommended
Encoder	
Connectable encoders	
•2-wire BEROS	Yes
	1 mA
• permissible quiescent current (2-wire	

BEROS), max.	
Drive interface	
Signal output I	
•Number	4; optionally RS 422/RS 485 or 5 V DC
•Type	RS 422 / RS 485 (P0+, P0-, P1+, P1-)
•Differential output voltage, min.	2.8  V;  RL = 200  ohms
•Pulse frequency	200 kHz; (P0+, P0-, P1+, P1-, P0, P1)
•Cable length, max.	10 m; shielded; 1 m unshielded
Signal output III	
•Type	5 V DC(P0, P1, DIS, CLR)
•Output voltage	30 V DC
•Output current	50 mA; output delay (DIS, CLR) max. 30
	μs
Galvanic isolation	
Galvanic isolation digital inputs	
•between the channels	Yes
•between the channels, in groups of	1 (STP, RPS, ZP), 2 (LMT-, LMT+)
Dimensions	
Width	71.2 mm
Height	80 mm
Depth	62 mm
Weight	
Weight, approx.	190 g