TSP10
Compact step motor drive
with encoder feedback

TSP10-PNE – Technical datasheet

- **Compact design**
- **Supply voltage 24-74 V_{DC}, max. motor current 7 A_{rms}**
- **Operation as speed or positioning control**
- **Microstepping capability**
- **Standstill current reduction**
- **Noiseless at standstill, quiet when running**
- **Low heat loss**
- **Galvanically isolated inputs (10) and outputs (4), usable as I/O module**
- **Separate supply voltage for electronics and motor**
- **Motion task with adjustable ramps, programmable via Profinet**
- **Profinet Conformance Class B, PROFIdrive V4.2 (Appl. Class 1 and 3)** NEW
- **For commissioning via TIA, please request a sample project (info@ahs-antriebstechnik.de)**

AHS Antriebstechnik GmbH
Fichtenweg 17
64319 Pfungstadt
Phone: +49 6157 9866110
Fax: +49 6157 9866112

AHS Antriebstechnik
Advanced Hybrid Stepper Systems

TSP10-PNE Compact Profinet step motor drive with encoder feedback

The TSP10 step motor drives are compact micro stepping power modules for 2-phase step motors with different configurations for the best possible adaptation to the respective application.

All TSP10 units are designed for mounting in the control cabinet and are equipped with corresponding accessories. The compact housing dimensions allow use even in very confined installation spaces. Heat dissipation is possible at the side via an optional heat sink or at the rear via the support surface.

The power supply and the motor connector are located on the bottom of the unit.
A 25-pin sub-D for digital inputs and outputs, two 9-pin sub-D for RS232 and encoder connection and two RJ45 sockets for Profinet are located at the front of the unit.
A two-colour LED indicates the status of the unit by its colours and flashing signals.

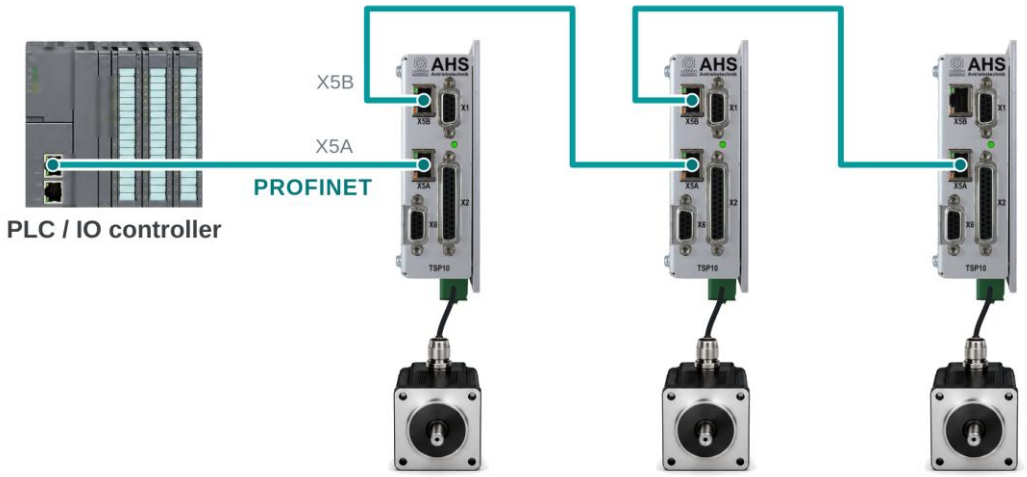
All digital inputs and outputs are optically separated and can be used independently of the motor control like a digital I/O module. Since only a few basic settings are necessary, the stepper motor control can be integrated into any control system with little effort.

Technical data

Power supply voltage	Operating range 24 - 74V_{DC}
Motor current	max. 10 A_{peak}; 0.2 to 7 A_{rms}
	adjustable in mA
	for 2-phase step motors in 4/6/8-wire version
Power supply	In principle, only an unregulated DC voltage is required for the power supply.
Ambient temperature/motor current	<50°C without heat sink: max. 3.2A @ 25°C / 1.6A @ 45°C
	>50°C with heat sink (optional): max. 7A @ 25°C / 3.5A @ 45°C
Heat sink temperature	Max. 60°C, forced ventilation may be necessary
Humidity	10-90%, non condensing
Error monitoring	Short circuit (phase-phase, phase-neutral) and overtemperature
Standstill current reduction	Delay and current value are freely adjustable
Inputs	10 galvanically isolated inputs, free configurable
Encoder	Incremental encoder RS422/TTL with signals A, B and index (differential), 5 V supply Resolution adjustable up to 10,000 increments
Input interface	Profinet, RS232 (only for diagnostic purposes)
Transmission rate	100 Mbit/s
Profile	PROFIdrive V4.2 – Application Class 1 (speed mode) and Application Class 3 (positioning mode), standard telegrams 1, 2, 7 and 9
Outputs	4 galvanically isolated outputs, PLC compatible freely configurable
	Status LED: green = ready for operation; red = fault; yellow = motor movement

Motion tasks

The TSP10-PNE Profinet module is the solution when it comes to controlling individual stepper motor controllers distributed in the field via Profinet.

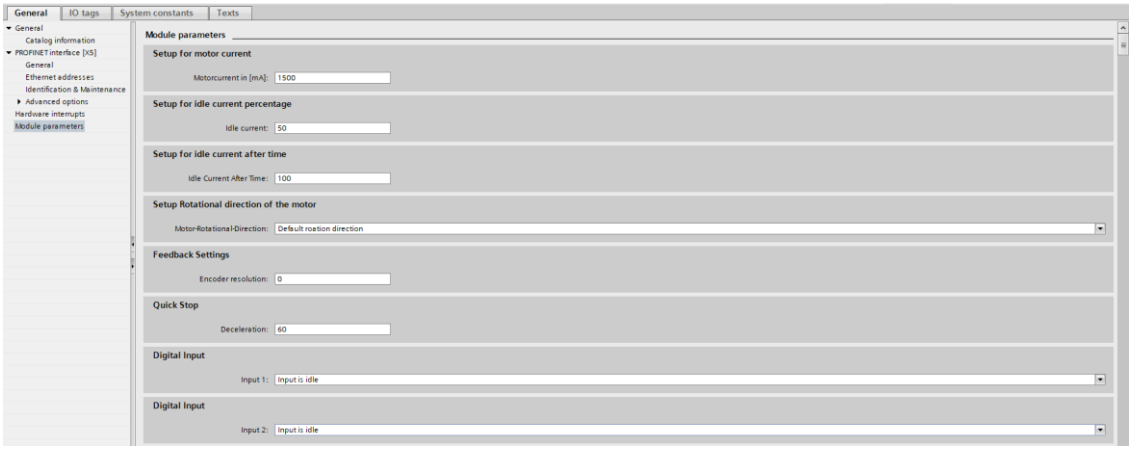


The Profinet step motor drive is a compact single-axis positioning controller with integrated step motor output stage. It detects two limit switches, a stop switch and a reference switch. The speed mode and the positioning mode can be easily configured via Profinet.
In addition, the TSP10-PNE supports the PROFIdrive profile V4.2. Speed mode (Application Class 1) is operated via standard telegrams 1 and 2, positioning mode (Application Class 3) via standard telegrams 7 and 9. This allows the drive to be integrated into existing PROFIdrive projects without manufacturer-specific function blocks.

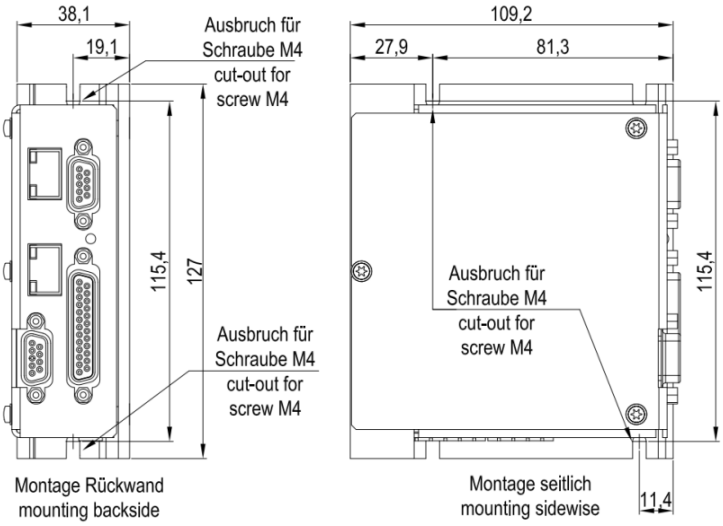
Since only a few settings are necessary, the Profinet stepper motor controller can be integrated with little effort into any control system that uses Profinet as a sensor/actuator bus. The fast and simultaneous transmission of input and output bytes for all Profinet participants opens up a wide range of possibilities for implementing multi-axis drives via the bus.

Parameter data

Setting the parameter data via Profinet hardware configuration:



Connection / Dimensions



Connectors	
Supply voltage	4-pole plug-in terminal strip
Motor	5-pole plug-in terminal strip
Serial interface	9-pin Sub-D-socket
I/Os	25-pin Sub-D-socket
Profinet connection	2 x RJ45-socket
Encoder	9-pin Sub-D-socket

All dimensions in mm

Ordering code

TSP10-PNE-00-AA = Standard version

TSP10 Type code

T	S	P	1	0	-	P	N	E	-	0	0	-	A	A

Drive Series

Max. Output Current = **10** A_{peak}

Basic Device (Step & Direction, RS232)	**BA**
Profibus	**PB**
Profinet	**PN**
Analog (+/- 10 Volt)	**AN**
ModBus	**MB**
CAN-Bus	**CB**

Standard (no feedback)	**0**
Encoder RS422/TTL	**E**
Encoder HTL	**H**
Encoder Biss-C	**C**

Digital Inputs = 24V; Step & Direction = 5V	**00**
Digital Inputs = 5V; Step & Direction = 5V	**05**
Digital Inputs = 24V; Step & Direction = 24V	**24**

Standard	**AA**
Customization	**XX**
Successor of DSM9/6410	**09**

Note: Not all combinations of the type code are possible.