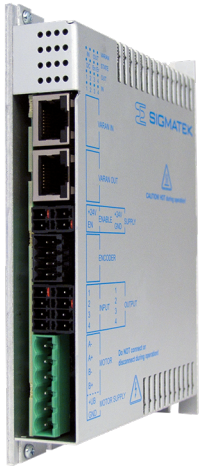
VARAN Stepper Module
VST 012



The VST 012 is a VARAN module designed for the control of a stepper motor up to a maximum 10 A RMS. The available operating modes are full step, half step and micro step. The maximum switching frequency of the output stage is 50 kHz.

The motor output is released through the Enable input. An incremental encoder input is available for position control of the stepper motor.

The module also provides four digital inputs and four digital outputs. The VARAN Out port allows the configuration of the VARAN bus in a linear structure.

Interfaces

Interfaces	1x VARAN In (RJ45) 1x VARAN Out (RJ45) (maximum length: 100 m)

Incremental Encoder Input

Number of channels	1
Input signals	Incremental encoder signals (A, /A, B, /B, R, /R) RS422 level 150 Ω termination
Input frequency	maximum 250 kHz
Counter frequency	maximum 1 MHz
Signal evaluation	4X
Counter resolution	16-bit
Power supply	+5 V/±5 %/0.2 A short-circuit protected
Encoder cable length	maximum 30 m

Enable Input

Number of inputs	1	
Input voltage	typically +24 V	maximum +30 V
Signal level	low: < +5 V	high: > +14 V
Switching threshold	typically +9.5 V	
Input current	typically 5 mA at +24 V	
Input delay	typically 5 ms	
Status display	LEDs grün	

Digital Inputs

Number of inputs	4	
Input voltage	typically +24 V	maximum +30 V
Signal level	low: < +5 V	high: > +14 V
Switching threshold	typically +9.5 V	
Input current	typically 5 mA at +24 V	
Input delay	typically 10 µs	
Status display	LEDs grün	

Digital Outputs

Number of outputs	4
Short-circuit proof	yes
Maximum permittedcontinuous load current/channel	2 A
Maximum total current (entire module)	6 A (100 % of on time)
Residual current (off)	≤ 12 mA
Turn-on delay	< 400 ms
Turn-off delay	< 400 ms
Status display	yellow LEDs

Stepper Motor Output

Number of phases	2
Output voltage	dependent on the supply (18-60 V)
Controller frequency	maximum 50 kHz
Output current	maximum 10 A continuous current in full step mode maximum 10 A continuous current in half step mode maximum 10 A RMS continuous current in micro step mode
Output current over the environmental temperature	maximum 10 A RMS continuous current at 45 °C maximum 8.6 A RMS continuous current at 50 °C maximum 6.3 A RMS continuous current at 55 °C maximum 5 A RMS continuous current at 60 °C

	Intermediate circuit capacitance	440 µF
	Step resolution	32 micro steps per full step
	Voltage measurement	15-73 V with an under voltage < 15 V or over voltage > 73 V, the motor output is shut down through the hardware.
	Temperature measurement	45-125 °C using an NTC at the mounting bracket Temperature warning at 85 °C => software warning over temperature at 95 °C => hardware shutdown of the motor output
	Motor cable length	maximum 30 m

Electrical Requirements

	Power supply +24 V	18-30 V DC
	Current consumption power supply +24 V	maximum 300 mA (electronic supply) + load on the digital outputs
	Supply voltage stepper motor	18-60 V DC
	Current consumption of stepper motor supply	corresponds to the load on the stepper motor

Voltage Monitor

	Power supply +24 V	supply voltage > 18 V (DC OK-LED lights green)
	Supply voltage stepper motor	supply voltage > 18 V and < 60 V (DC OK-LED lights green)

Article Number and Miscellaneous

	Article number	16-014-012
	Approval	CE, $_{c}$UL$_{us}$
	Mechanical dimensions	26 x 151 x 121.5 mm (W x H x D)

Environmental Conditions

	Storage temperature	-20 ... +85 °C	
	Environmental temperature	0 ... +60 °C	
	Humidity	0-95 %, non-condensing	
	Operating conditions	pollution degree 2	
	EMC resistance	in accordance with EN 61000-6-2 (industrial area)	
	EMC noise generation	in accordance with EN 61000-6-4 (industrial area)	
	Shock resistance	EN 60068-2-27	150 m/s²
	Protection Type	EN 60529	IP20

Notes