

# Stepper Module VST 011



The VST 011 is a very compact power module designed to control a stepper motor up to a maximum of 5.0 A. 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 4 digital inputs and 4 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)
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## 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 bits
Encoder power supply	+5 V / ±5 % / 0.2 A short circuit protected
Encoder cable length	maximum 30 m

## Enable input

Number of ...	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	5 mA at +24 V	
Input delay	typically 5 ms	
Status display	green LED	

## Digital inputs

Number of ...	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	5 mA at +24 V	
Input delay	typically 10 μs	
Status display	green LEDs	

## Digital outputs

Number of ...	4	
Short-circuit proof	yes	
Maximum continuous current per channel	2 A	
Maximum total current (entire module)	6 A (100 % of on-time)	
Residual output current (inactive)	≤ 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 – 70 V)
Controller frequency	maximum 50 kHz
Output current	maximum 5.0 A continuous current in full step mode maximum 3.5 A continuous current (5 A peak) in half step mode maximum 3.5 A continuous current (5 A peak) in micro step mode
Output current over the environmental temperature	maximum 5.0 continuous current at 50° C maximum 3.5 continuous current at 55° C maximum 2.0 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 °C – 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 of the +24 V supply	maximum 300 mA (electronic supply) + load on the digital outputs
Stepper motor supply voltage	18 – 70 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)
Stepper motor supply voltage	Supply voltage > 18 V and < 70 V (DC OK-LED lights green)

Article number and miscellaneous	
Article number	16-014-011
Hardware version	2.x
Mechanical dimensions	151 mm x 26 mm x 121.5 mm (WxHxD)

Environmental conditions		
Storage temperature	-20 – +85 °C	
Operating temperature	0 – +60 °C	
Humidity	0 - 95 %, non-condensing	
EMV resistance	according to EN 61000-6-2 (industrial area)	
EMC – noise generation	according to EN 61000-6-4 (industrial area)	
Shock resistance	EN 60068-2-27	150 m/s <sup>2</sup>
Protection Type	EN 60529	IP 20