

## Step Motor Drivers SMD10, SMD11, SMD15 and SMD30



This series of step motor drivers meets almost all needs for precise control of step motors. They are available in a range of models: with and without step generator, without integral power supply and cabinet, with power supply and a HF cabinet, with output voltages from 12 to 150V and in 3, 6 and 12 A models.

The basic driver has step-pulse and direction inputs, while models with a built-in step generator provide facilities for adjusting the start velocity, acceleration/deceleration and two different top velocities during the same motor operation.

The Drivers are equipped with a total of 7 inputs and 4 outputs, providing many application features: 2 end-of-travel inputs that stop motor operation on activation, 2 analogue inputs

which can be used for controlling motor current and top velocity using an externally applied voltage. DIP switches on the front panel are used to configure the inputs, e.g. forward and reverse motor operation, selection of top velocity and start/stop.

- Single power supply
- Ext. operating frequency 0-20kHz
- Int. operating frequency 0-10kHz
- Driver stages of 3, 6 and 12 A, and 12-150V
- Top velocity can be controlled using external voltage (0-5/0-10V)
- Phase current can be controlled using external voltage (0-5V)

- Stop input which stops motor operation instantaneously
- Status output which indicates motor is running or stationary
- CW/CCW end-of-travel inputs
- Facility for 2 velocities in same motor operation
- 200, 400, (800) or (1600) steps per revolution (full-, half, 1/4 or 1/8 step operation)
- All in/outputs optically isolated
- Voltage overload and motor output short-circuit protection
- Mounting either in 19" rack or on surface via T-flanges (types with power supply in DIN cabinet)



## Features (continued)

In addition to the features mentioned above, all models also include the following features:

- Adjustment of stand-by current
- Adjustment of operating current

- External switching between operating and stand-by current
- LED indication of motor operation
- Error output
- Step-pulse output

- Direction output
- Voltage output 5VDC/50mA
- Full- and half-step modes
- Automatic switching between operating- and stand-by current

## Power Supply

Driver types SMDxxx1 and SMDxxx2 are built on Euro-cards and require an external power supply. To facilitate easy powering, only a single supply voltage need be connected to the Drivers. The internal supply ensures the correct

powering for driver stages, control circuitry, etc.

Driver types SMDxxx3 and SMDxxx4 are supplied in DIN cabinets and include a complete power supply for mains

operation. The Driver's internal voltage supply is available externally and can thus be used for powering other Drivers in the system.

## Driver Types, Selection of Driver

Selection of the Driver model for a specific task is primarily made on the basis of the required motor voltage (40, 80 or 150VDC) and current (3, 6 or 12 A). It should then be decided whether a complete Driver with built-in 230VAC mains supply (SMD10 and 30 also 115VAC) is required or an external DC power supply is available, which can advantageously be used to power several drivers. Here JVL's power supplies PSU40 (40VDC), PSU80 (80VDC) and PSU150 (150VDC) can be used. Where 115VAC mains supply is required the power supplies can also be used. Finally a decision should be made whether the Driver should include an internal step generator.

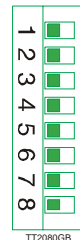
If a Driver without a built-in step

generator is selected, a controller will be required, e.g. the control card of a PLC, or a PC controller card which can control the motor position. In these cases, the Driver's step-pulse and direction inputs are used.

If a Driver with a built-in step generator is selected, the step generator can generate the step pulses on the basis of the 2 control inputs, e.g. from a PLC or sensor, etc.

The start velocity, acceleration/ deceleration time and 2 top velocities, as well as 6 different control modes can be adjusted. A microprocessor ensures control of the step generator in accordance with the pre-set operating parameters.

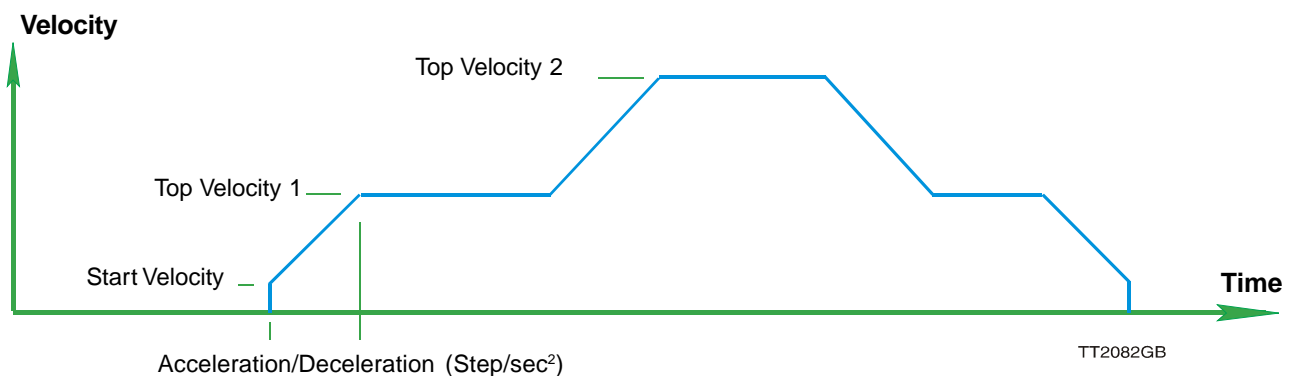
Adjustment of Mode etc. (DIP switch on Driver)



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- Start velocity —
- Acceleration/ Deceleration —
- Top velocity 1 —
- Top velocity 2 —

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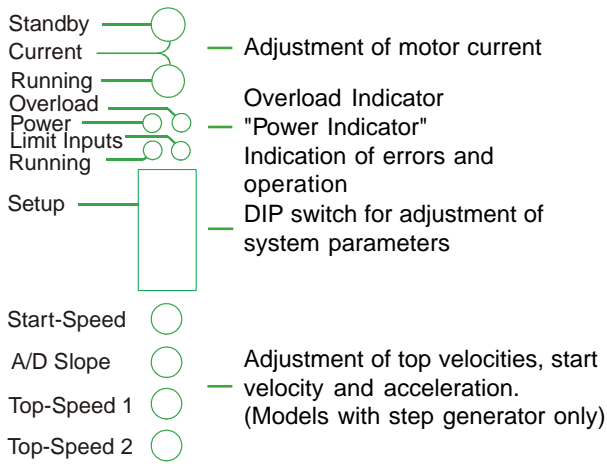


Typical motor operation profile with 2 different top velocities



## Front Panel Adjustments

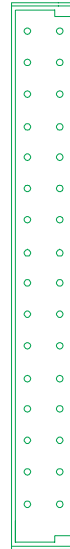
All Drivers have the following adjustment facilities and indicators on the front panel.



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## Rear Panel Connections

All inputs and outputs are accessible via a DIN multi-connector on the rear panel. SMD30 models are additionally equipped with an extra 11-pole DIN connector for motor connections.

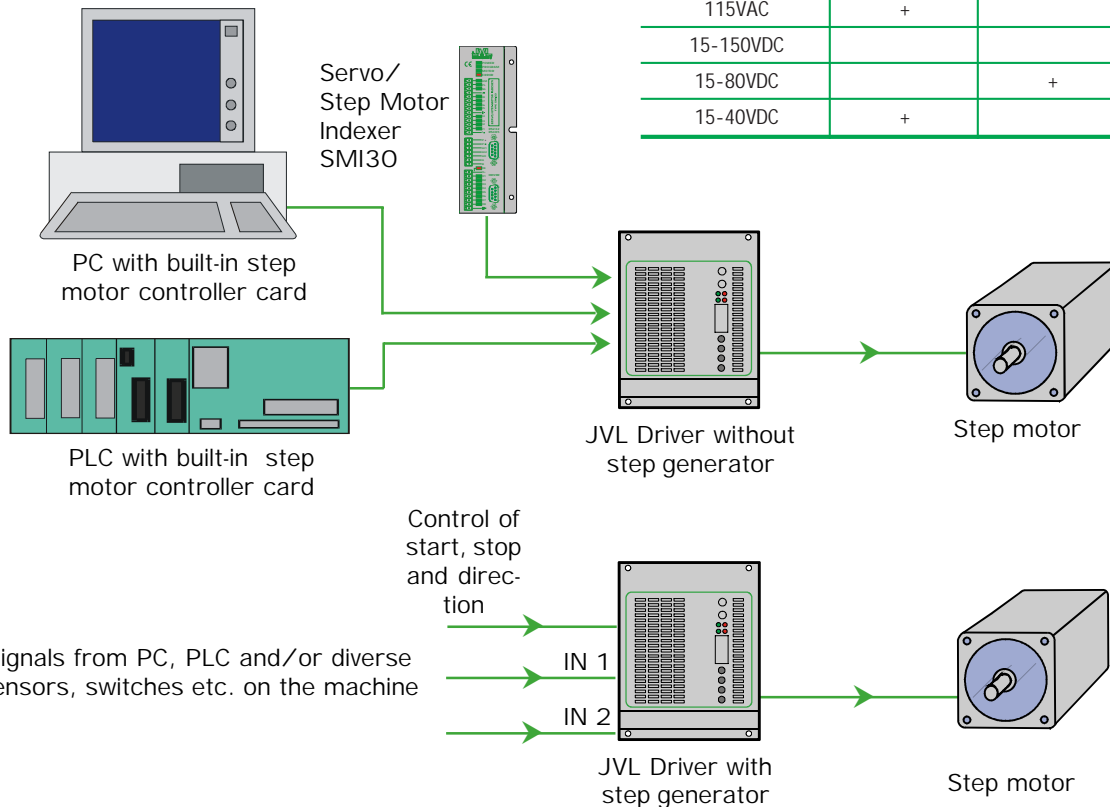


- Power Supply: Via separate mains connector or 12-150VDC
- Status Output
- Analogue Input for control of motor current
- Analogue Input for control of velocity
- Motor Output
- Stop Input
- End-of-travel Inputs
- Various control inputs
- Chassis (ground)

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## System Configurations

The illustration belows shows typical configurations for a step motor system using JVL's Step Motor Drivers.



Step resolution	SMD10xx	SMD15xx	SMD30xx
1/1 og 1/2	+	+	+
1/4 og 1/8		+	
<b>Supply voltage</b>			
230VAC	+	+	+
115VAC	+		+
15-150VDC			+
15-80VDC		+	
15-40VDC	+		

# Step Motor Drivers SMD10, 11, 15 and 30

## Specifications

### Drivers on Eurocard, without power supply and cabinet

Version 1. Without step generator. Inputs for step-pulse and direction. End-of-travel inputs.

Version 2. With step generator. Start-stop inputs. Trimmers for start velocity and ramp duration, 2 selectable top velocities

Type	Phase Current (A)		Driver Voltage typical (VDC)	Supply Voltage (VDC)		Dimensions (mm) HxBxD
	Min.	Max.		Min.	Max.	
SMD10A1 and 2	0.1	3	40	12	45	100x46.5x160
SMD10B1 and 2	0.1	6	40	12	45	100x46.5x160
SMD15B1 and 2	0	6	80	15	85	100x46.5x160
SMD30C1 and 2	0	12	150	15	160	100x90x160

### Drivers with integral power supply and cabinet

Version 3. Without step generator. Inputs for step-pulse and direction. End-of-travel inputs.

Version 4. With step generator. Start-stop inputs. Trimmers for start velocity and ramp duration, 2 selectable top velocities

Type	Phase Current (A)		Driver Voltage typical (VDC)	Supply Voltage (VAC)		Dimensions (mm) HxBxD
	Min.	Max.		Min.	Max.	
SMD10A3 and 4	0.1	3	40	207(100)	241(125)	111.4x103x171
SMD10B3 and 4	0.1	6	40	207(100)	241(125)	111.4x103x171
SMD15B3 and 4	0	6	80	207	241	111.4x103x171
SMD30C3 and 4	0	12	150	207(100)	241(125)	111.4x138x171

Drivers for 2 axes:

SMD11A4, as SMD10A4, but with 2 drivers in same cabinet	111.4x138x171
SMD11B3, as SMD10B3, but with 2 drivers in same cabinet	111.4x138x171
SMD11B4, as SMD10B4, but with 2 drivers in same cabinet	111.4x138x171

## General

	Min.	Max.	Units
Digital inputs			
Allowable voltage	-1.0	30.0	VDC
Logic "0"		2.3	VDC
Logic "1"	4.2		VDC
Step-pulse/In1-Input			
Allowable voltage	-1.0	30	VDC
Logic "0"		1.9	VDC
Logic "1"	4.2		VDC
Outputs			
Supply voltage	4.5	30	VDC
Analogue inputs (current, velocity)			
Control voltage	-0.5	5.5 (10.5)	VDC
Chopper frequency	20	25	kHz
Ambient temperature			
SMDxxx1/SMDxxx2	0	50	°C
SMDxxx3/SMDxxx4	0	40	°C

