Libra is a new line of vectorial drives characterised by innovative performance; these drives allow to command stepper motors with a drastic noise reduction, less heating and extremely smooth movements. Suitable for driving 2-phase hybrid stepper motors, they can be coupled mainly with the series of motors from Nema 8 to Nema 34. Completely digital and made using Arm Core M4 technology, Libra drives offer exceptional reliability combined with mechanical compactness and a competitive price. They can be used in many types of machines where there is already a controller for the generation of digital clock & direction signals, such as X-Y tables, labelling machines, laser cutters, pick-place devices, engraving tables, etc. and they are recommended in all applications in which not only versatility, precision and speed are required, but also smooth and silent movements as in the medical field.

Principal features

1   Sensorless motor stall detection
2   Integrated diagnostics
3   Motor short-circuit protections, open phases, over and under voltage and temperature
4   Technology keeps the motor torque constant, allowing smooth and silent movements
5   Open and Close Loop
6   Smooth movements
7   Compact size
8   Silent rotation
9   Reliability
10 Low EMC emissions
11 Software resonance damping
12 Auto-tuning of the motor control parameters
13 High efficiency current regulation
14 Reduction of motor temperatures
15 Digital inputs from 2 to 24 Vdc
16 Fast and easy installation

Functions

1   Setting of the current value by means of dip-switches
2   Selection of the step angle by means of roto-switches. In order to maintain compatibility with traditional drivers, step angles have been emulated through software, the current regulation is always sinusoidal.
3   Possibility to select five user functions:
1   enabling of motor stall detection. Reading the motor BEMF, Libra drivers detect without encoder the step loss, showing alarm status with the Fault digital OUT and a LED sequence.
2   Step/Direction or Clock-Up / Clock-Down control mode.
3   Enable input management (safety control).
4   30% or 70% automatic current reduction (still motor).
5   enabling of "Clock Test" function, useful during the driver's installation, which shows the right presence of the clock signal through status LED flashing.

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Technical Data

Driver Type

Stepper Motor from Nema 8 up to Nema 34

Interface control mode

Clock & Direction
Open Loop
Close Loop

Electrical data

Operating voltage (min.)	24 [Vcc]
Operating voltage (max.)	80 [Vdc]
Rated current	0.2 [A/ph rms] ÷ 3.2 [A/ph rms]
Peak current	0.3 [A/ph peak] ÷ 4.5 [A/ph peak]
Power stage	H bridge bipolar chopper at 40 kHz.

Operating Mode

Step resolution	From full step up (200 pps - 1.8°) to 1/256 (emulated)

Inputs

Digital inputs	4 optoisolated: 2 - 24Vdc / 2 - MHz NPN, PNP or Line Driver

Output

Digital outputs	1 Digital OUT 24 Vdc - 100 mA for fault

Protective functions

Over/Under voltage, Over Current, Over Temperature, Short Circuit Phase/Phase and Phase/Ground

Mechanical Data

Weight	290 g
Dimension (length)	30.0 [mm]
Dimension (width)	74.0 [mm]
Dimension (height)	128.0 [mm]
Protection class	IP20
Status monitoring	3 LED with guiding light (green and red/yellow)

### Ambient conditions

Temperature – Operation (min.)	0 [°C]
Temperature – Operation (max.)	50 [°C]
Temperature – Storage (min.)	-25 [°C]
Temperature – Storage (max.)	55 [°C]
Humidity (non-condensing) (min.)	5 [%]
Humidity (non-condensing) (max.)	90 [%]

Software

Only for the code SBA207N001-S200

Setup and configuration	E&D Studio

November 2019 edition / subject to change

Version

	Power Supply Voltage				Output Current			Interface Control Mode	Open or Close Loop	Software
	Vcc.		Vac.		[A/ph rms]		[A/ph peak]			
	Min.	Max.	Min.	Max.	Min.	Max.	Max.			
SBD203N001-S100	24	80			0.2	3.2	4.5	Clock & Direction	Open Loop	
SBD207N001-S100	24	80			1.7	7.1	10	Clock & Direction	Open Loop	
SBA207N002-S200			18	56	1.7	7.1	10	Clock & Direction	Close Loop	√
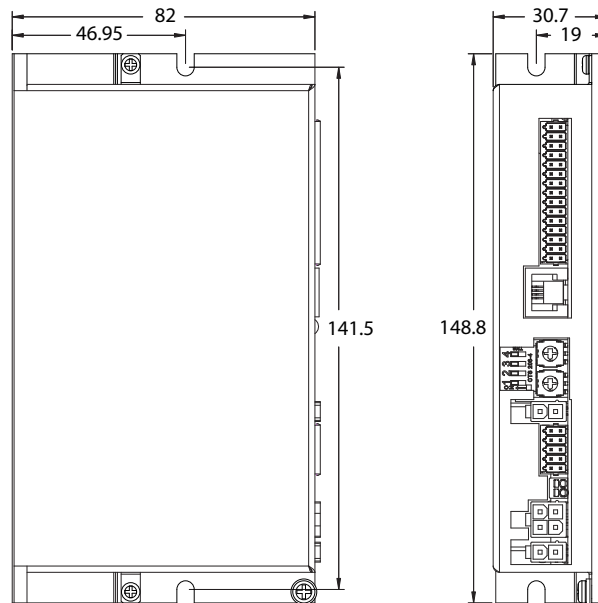
Product Combination

Code	Size (mm)	Current Phase (A)	Holding Torque (Nm)	Page
SM42058-13E4F.000	42	1,33	0,22	50
SM42064-16E4F.000	42	1,68	0,36	50
SM42072-16E4F.000	42	1,68	0,44	50
SM42084-30E4F.000	42	3	0,80	50
SM60066-28E4F.000	60	2,80	1,10	53
SM60075-28E4F.000	60	2,80	1,65	53
SM60086-28E4F.000	60	2,80	2,10	53
SM60107-28E4F.000	60	2,80	3,10	53
SM86084-59E4K.000	86	5,90	3,40	56
SM86097-55E4K.000	86	5,50	4,60	56
SM86115-55E4K.000	86	5,50	7	56
SM86133-60E4K.000	86	6	8,70	56
SM86172-62E4K.000	86	6,20	12,1	56

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