Specifications

MODELS		
Code		**Holding Torque**
SM4A	B	1,10 Nm ±10%
SM4A	C	1,65 Nm ±10%
SM4A	D	2,10 Nm ±10%
SM4A	E	3,30 Nm ±10%

POWER SUPPLY
Separated 24 Vdc (logic) and 18÷56 Vac (power)

POWER STAGE
H-bridge bipolar chopper of 40 KHz

CURRENT
0 ÷ 4.2 Arms (0 ÷ 6.0 Apeak)

STEPLESS CONTROL TECHNOLOGY
65536 position per turn

OPTOISOLATED CONTROL INTERFACES
Modbus or CANbus and SCI interface for programming and real time debugging

INPUTS / OUTPUTS
4 digital optocoupled inputs
2 digital optocoupled outputs (100 mA)
1 analog optocoupled input (potentiometer or ±10Vdc) (optional)

FEEDBACK CONTROL POSITION
Incremental encoder 400, 1000 or 2000 pulse/turn (optional)

SAFETY PROTECTIONS
Over Current, over Temperature, closed Windings phase/phase phase/ground

TEMPERATURE
Operating from 5°C to 40°C, storage from -25°C to 55°C
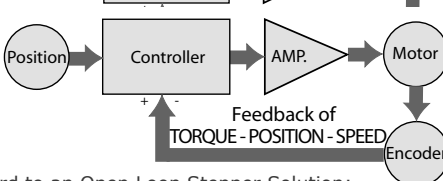Humidity: 5%÷85% not condensed

PROTECTION CLASS
IP65

Open loop / Closed Loop

Open Loop Control — Position → Controller → AMP. → Motor

Closed Loop Control — Position → Controller → AMP. → Motor → Encoder
Feedback of TORQUE - POSITION - SPEED

- with regard to an Open Loop Stepper Solution:
  - reliable positioning without synchronism loss;
  - keeps the original position stable and recovers it automatically in case of positioning errors caused by external factors such as mechanical vibrations;
  - 100% use of the motor torque;
  - capacity to operate at high velocity related to the current control, which is adjusted depending on the load variations, where the normal systems in open loop use a constant current control at all velocities without considering the load variations.
- compared with a brushless servo controlled solution:
  - no need to adjust the power (automatic current regulation depending on the load changes);
  - keeping the position stable without fluctuations after completing the positioning;
  - quick positioning favoured by the independent control of the integrated DSP;
  - continuous and fast execution of short stroke movements thanks to the short positioning time.

Full Digital Programmable
50 Poles Motor and Drive with fieldbus
for Advanced Motion Control with reduced costs

TITANIO
VECTOR - STEPPER - DRIVES

errorless servo efficient **else** technology®
by Ever Elettronica

WARRANTY 3 YEARS

SM4A
Integrated Servomotors

- Multiform Control Modes
- On Board Safety provisions:
  - √ fully tested for direct installation unit
  - √ built in watch dog functionality
  - √ fault monitoring and handling
  - √ on field working errors buffering
  - √ separated power supply for logic and power
- Servomotors main features:
  - √ Stepless control technology
  - √ low motor vibration √ protection class IP65
  - √ closed loop √ no resonance
  - √ low heat production √ high reliability
 - √ high speed and torque √ AC power supply

E ever ELETTRONICA
the clever drive

ELETTRONICA PER AUTOMAZIONE INDUSTRIALE
Via del Commercio, 2/4 -9/11
Loc. S. Grato - Z.I.
26900 - LODI (LO) - Italy
Tel. 0039 0371 412318 - Fax 0039 0371 412367
email infoever@everelettronica.it
www.everelettronica.it

Step & Direction or Analog
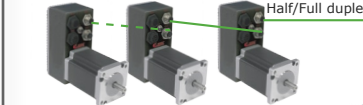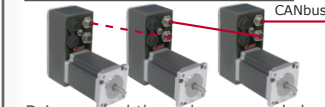
Step & Direction Mode   Analog Ref. Speed Mode

+ 10
- 10
3rd Party Controller   Step out
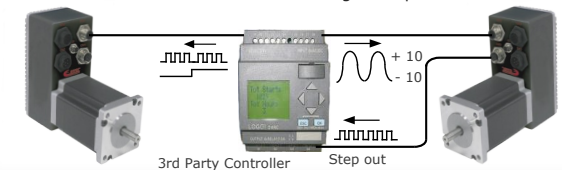
Multi Axes Systems

CANopen Slave Mode - c0380   CANopen

Modbus Slave Mode - c0490   RS232 or RS422/RS485 Half/Full duplex

Profibus or Devicenet Slave Mode   CANbus

Controller Master: PC, PLC or other

Profibus or Devicenet

Up to 32 controllable drives thanks to the GWC Gateway unit

GWC Gateway

Drive control through commands by Master Controller.
Suitable for multi axes systems (up to 127 drives).
Built in Powerfull Motion Module functionality assures Perfect Synchronization among axes and reduces Master Controller
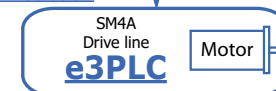
Stand Alone Mode

User Programmable - e3PLC- c0390 / c0490

e3PLC integrates PLC, Motion Module, Process Module and drive in One Device. e3PLC Studio PC interface is available to friendly, fast and easy custom to machine or process device programming.

Traditional Solution

PLC → Motion Module → Drive → Motor

e3PLC - SM4A Solution

SM4A Drive line **e3PLC** → Motor
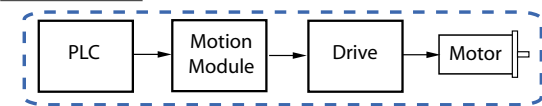
e3PLC Handler allows user to access all the functionalities and resources of the device and to manage and synchronize the motion module and other drive resources to any process' events.
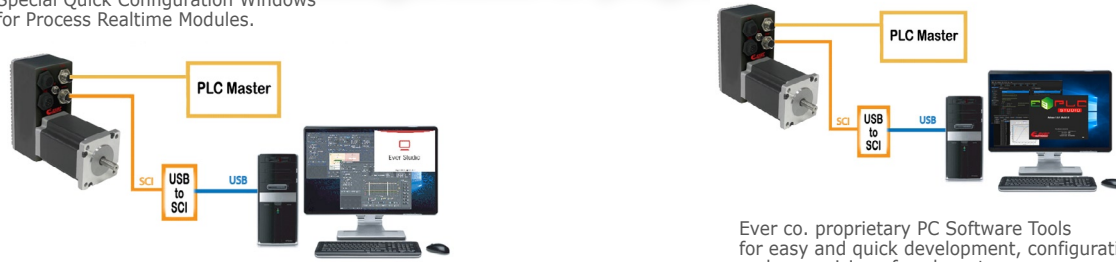
Access to all Powerful Motion functionalities
Built in **Process Real Time Modules** for special applications:
- Labelling
- Labelling Premium
- CAM management
- Wire Processing
- User Custom Process
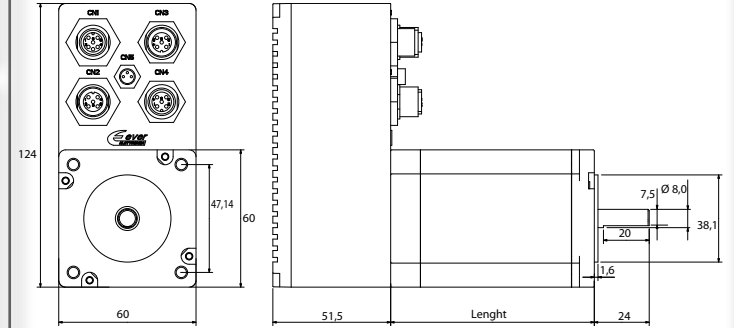- ......

Confuguration or programming

Special Quick Configuration Windows
for Process Realtime Modules.

Ever co. proprietary PC Software Tools
for easy and quick development, configuration
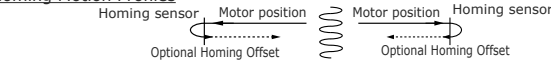and supervision of each system.

Mechanical Data

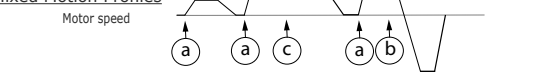| Models	Lenght (mm)	Weight (kg.)
SM4A_____B__	49,0	1,450
SM4A_____C__	59,0	1,620
SM4A_____D__	69,0	2,050
SM4A_____E__	89,0	2.250

Power Motion Module

- Step & Direction Control Mode
- Analog Speed Ref. Control Mode (by potentiometer or ±10Vdc)
- Velocity Control Mode
- Wide range of Positioning Control Modes (homing, relative, absolute, target)
- CAM Mode... cam profile can be programmed
- Electric Gear with programmable gear ratio to track external master reference
  (from fieldbus or incremental encoder) of motor Speed and Position
- High speed I/O triggered motor start & stop to event syncronizing for fast
  response demanding application: labeling, nick_finder, on fly cut., etc ...
- Multi Axis movements syncronization capability
- On fly change among any Motion Module Control Modes
- On fly Electric Gear Enable/Disable capability
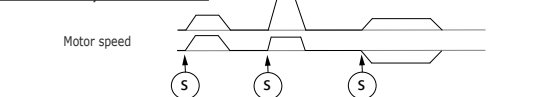- Closed Loop of torque, speed and position
- Labelling management module

Homing Motion Profiles

Homing sensor — Motor position / Motor position — Homing sensor

Optional Homing Offset / Optional Homing Offset

Velocità Motore

a = new target position
b = on fly change of target position
c = on fly change of motor speed

Mixed Motion Profiles

Motor speed

ⓐ ⓐ ⓒ ⓐ ⓑ

Multi Axes Synchronization

S = new command from master controller

Motor speed

Ⓢ Ⓢ Ⓢ

Ordering Information of SM4A Integrated Servomotors and Options

Order code		Power				System Resources						
Versions	Config. (see table)	Power supply Power	Logic	Current	Data of the Integrated Motor (z = B / C / D / E)	CAN	Serial	SCI	Digital Inputs	Digital Outputs	Analog Inputs	Encoder (w = N - 4 - 5 - 6)
SM4A342PC242zw0	c0380 c0390	18 ÷ 56 Vac	24 Vdc		B = Holding torque 1.10 Nm±10% Phase resistance 0.44 ohm ±10% Phase inductance 2.54 mH ±10% Detent torque 0.05 Nm Rotor inertia 275 g.cm²	CANbus (Canopen)		For configuration and/or programming and real time debug	4	2	---	N=No encoder 4=Bidirectional incremental encoder 400 pulse 5=Bidirectional incremental encoder 1000 pulse 6=Bidirectional incremental encoder 2000 pulse
SM4A342PC272zw0				0 ÷ 4.2 Arms (0 ÷ 6.0 Apeak)	C = Holding torque 1.65 Nm±10% Phase resistance 0.19 ohm ±10% Phase inductance 1.70 mH ±10% Detent torque 0.07 Nm Rotor inertia 300 g.cm²						1	
SM4A342PM242zw0	c0490	18 ÷ 56 Vac	24 Vdc		D = Holding torque 2.10 Nm±10% Phase resistance 0.27 ohm ±10% Phase inductance 3.00 mH ±10% Detent torque 0.09 Nm Rotor inertia 570 g.cm²	---	RS232 RS485 (Modbus)				---	
SM4A342PM272zw0					E = Holding torque 3.30 Nm±10% Phase resistance 0.65 ohm ±10% Phase inductance 3.20 mH ±10% Detent torque 0.10 Nm Rotor inertia 840 g.cm²						1	

Configuration, Control Method and Optional Software Starter Kits

Config.	Control	Software Starter Kits Code	Description of the Software Starter Kits
c0380	Canopen Control Mode (CiA DS402 profile)	SM4A_SERV00-SL	Communication kit for SCI service interface to configure the drive with Ever Studio.
c0390	Stand-Alone e3PLC Studio IDE Canopen Mode	SM4A_SERV00-EE	Communication kit for SCI service interface to program the drive with e3PLC Studio IDE.
c0490	Stand Alone e3PLC Studio IDE Modbus Mode	SM4A_SERV00-EE	Communication kit for SCI service interface to program the drive with e3PLC Studio IDE.