# ELECTRONIC CONTROL MODULE – MINI-SA -

Miniaturized DC micromotor control system for RADIA's actuators and gearmotors

Main features

- For LAT, LATT, GM actuators and gearmotors equipment
- Power supply 10-28 VDC
- Maximum current adjusted to DC motor, 5A
- (Duty Type) Duty cycle S3: 25% (15 Sec. / 60 Sec.)
- Motor power from 5W to 100W
- Parameterized on the motor to be checked: 0.5A, 1A, 2A, 4A, 12/24V
- Protection Reverse time over-current motor
- 3 inputs, 1 output
- Control input - START/STOP
- Control input - FORWARD/REVERSE
- Control input – Speed (speed selection)
- Output NPN (Open-Collector). Load control max. 500mA
- Virtual limit switches back and forth
- Arbitrary setting of virtual limit switches
- 10 operating options of OC-NPN output, one on request
- PID-FFW Position and Speed Regulator
- Active reverse acceleration and deceleration ramps and on limit switches
- Acceleration and dynamic deceleration in relation to speed
- Immediate stop to stop request
- Functioning as Autonomous Application
- Temperature of the working environment-10°C +40°C
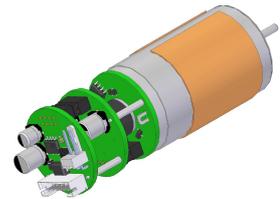
Description

The control system is developed with DSP and high efficiency MOSFET technology. The small dimensions allow direct installation on the electric motor "Mounted Directly On Motor". The electronics are robust and reliable and equipped with anti-noise filters on the control inputs. In addition, it is equipped with the control circuit of a load of 500mA configurable on request between 10 options. The power supply adapts easily to a wide range of values, ranging from 10VDC to 28VDC; this range covers the typical voltage of the discharge battery and battery charge from 12V to 24V. For a time less than 500mS can withstand voltage peaks up to 40 VDC. The compact size of the electronic circuit required careful design regarding the quality of thermal dissipation of switching circuits. At X1 connector are available 3 inputs, START/STOP, FWD/REV, SPEED and 1 output "open collector" called OC-OUTPUT. The main features of the control system are: 1) the storage of virtual limit switches, 2) control by discrete signals, manually given through switches or buttons, or by PLC units, or equivalent systems, 3) accepts only control signals using solid state drivers, such as "open-collector". 4) the speed adjustment takes place in step-by-step mode from the minimum value, to the maximum and return, in a cyclical way. 5) safety of use, is guaranteed by the logic of operation of the input START/ STOP that prevents accidental departures.

Applications

This system is suitable for a wide range of machines, equipment and tools: as medical equipment, small automatic machines, automatisms in general, automatic controls, packaging industry, home automation, agricultural automation, milling industry automation, material handling, transport vehicles, sweepers, etc. Particularly suitable for applications that require minimum space, minimum vibration, low noise, high speed and high precision, at low cost. This system is suitable for the control of linear actuators and telescopic actuators, adapting to the main configurations available, from a few centimeters up to 1000 [mm] of release length.

Typical connection scheme
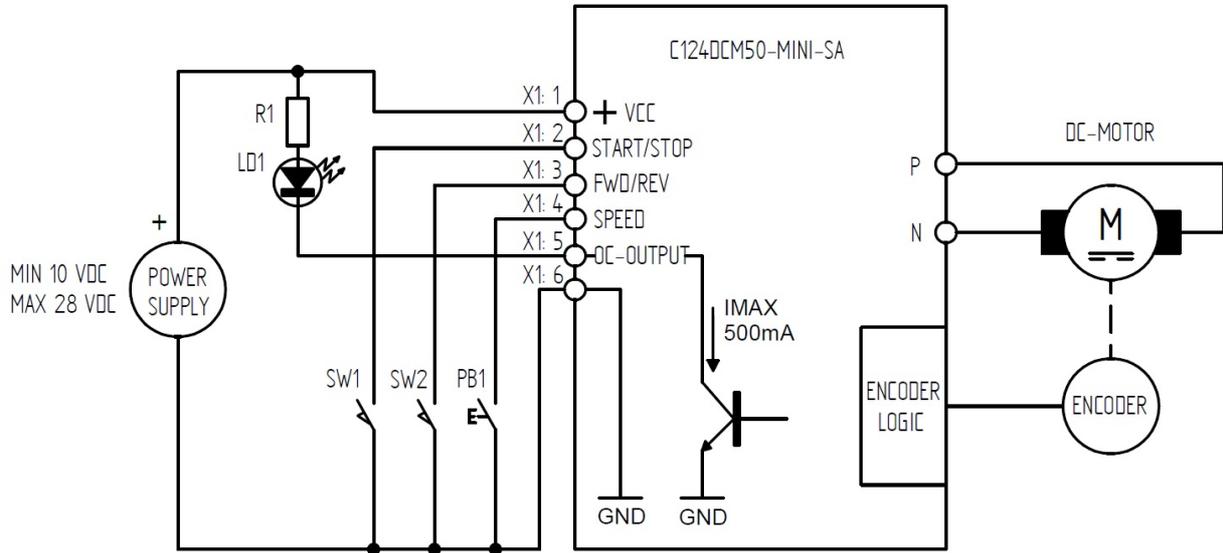
Main technical specifications

Denominazione.	Minimum	Typical	Maximum	Unit of measure
Power supply	10	24	28	(V) DC
Motor current	0,5	2	4	(A)
Motor power	5	50	100	(W)
Power consumption in Standby	0,3	-	0,5	(W)
Duty Cycle (not ventilated)	S3: 25% (15 Sec. / 60 Sec.)			
Working temperature	-10	25	40	(°C)
Storage temperature	-20	-	65	(°C)
Relative humidity of operation	-	-	80	(%)
Weight	≈12 g			

Mechanical specifications (units in mm)
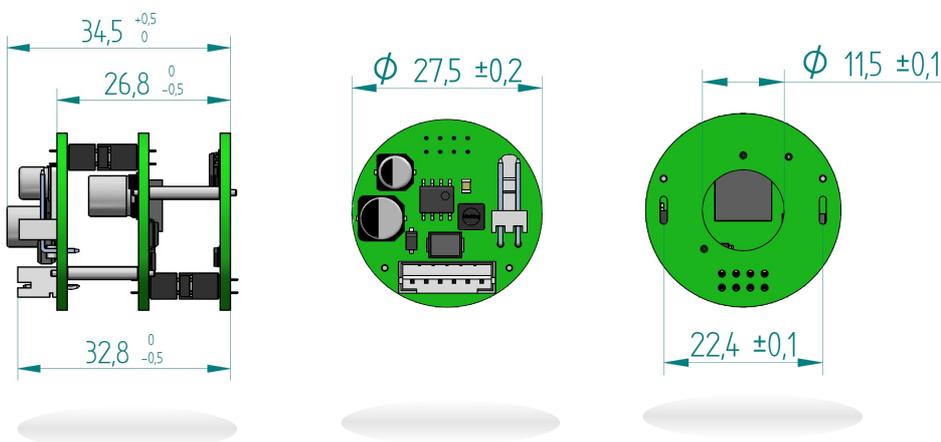
Connector X1

Pin 1: +Vcc
Pin 2: START/STOP
Pin 3: FWD/REV
Pin 4: SPEED
Pin 5: OC-OUTPUT
Pin 6: GND
Tipo JST
Passo 2 mm