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IL MANUALE DI GEVINO MOTORE v1.0

Compatible Arduino Zero
Manual v2

ITA

I prodotti GEVINO sono stati progettati per ambienti civili, domestici, aziendali o industriali. Hanno ingressi e uscite ad alta tensione, alta corrente, protetti contro disturbi, scariche elettrostatiche, campi magnetici, carichi induttivi, extra tensioni e correnti.

Sono conformi alle direttive CE.

E' possibile personalizzarle per una quantità superiore a 50 pezzi.

Per programmare Gevino è sufficiente collegarlo al proprio computer con un cavo USB, scrivere qualche istruzione, e premere il tasto «Upload». E' ricchissimo di librerie per un' infinità di moduli e sensori. Le istruzioni sono abbastanza semplici e comprensibili.

Il software di programmazione, chiamato anche IDE (Ambiente Integrato di Sviluppo), contiene numerosi esempi da cui prendere spunto per scrivere i propri listati.

ENG

GEVINO products have been designed for civil, domestic, corporate or industrial environments. They have high voltage and high current inputs and outputs, protected against disturbances, electrostatic discharges, magnetic fields, inductive loads, extra voltages and currents.

They comply with EC directives.

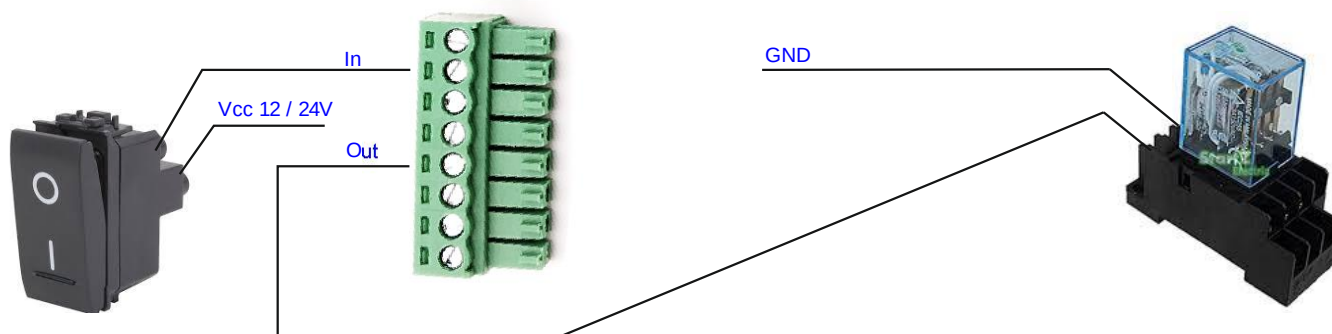
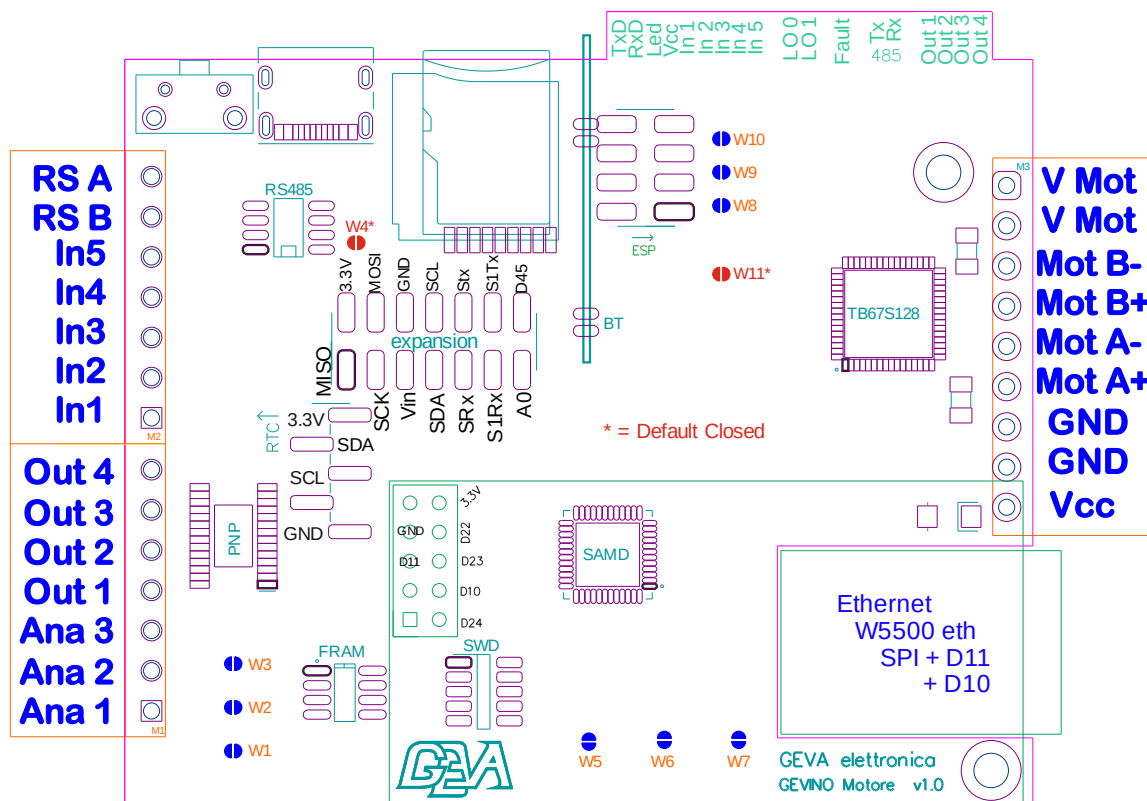
It is possible to customize them for more than 50 pieces.

To program Gevino simply connect it to your computer with a USB cable, write some instructions, and press the «Upload» button. It is very rich in libraries for an infinity of modules and sensors. The instructions are quite simple and understandable.

The programming software, also called IDE (Integrated Development Environment), contains many examples from which to take inspiration to write their own listings.

NOTE

You can update the program in the GEVINO from the Internet or SD card, asking a dedicated bootloader.
Si può aggiornare il programma nel GEVINO da internet o SD card, chiedendo un bootloader dedicato.



JUMPER

		Ana1	10V
W1		Ana1	1V
W1	W7	Ana1	20mA
		Ana2	10V
W2		Ana2	1V
W2	W6	Ana2	20mA
		Ana3	10V
W3		Ana3	1V
W3	W5	Ana3	20mA

W4	Open for use Serial1_Rx on expansion, lose RS485
W8	LO0 on In3
W9	LO1 on In2
W10	Diag on In1
W11	Open for use A0 on expansion, lose In4

LEDs

LO0 Red	LO1 Yellow	Motor
Off	Off	Normal
On	Off	Open Load
Off	On	Over Current
On	On	Thermal Shutdown

Fault RED PNP Output Short Circuits

Specs / Specifiche

- Vcc from 7 to 40V
- V Motor 7 to 44V (It can be different from VCC)
- TB67S128FTG motor controller. 1/128 step
- Stepper motor or Two Brushed motor.
- High efficiency motor current control mechanism (ADMD: Advanced Dynamic Mixed Decay)
- Built-in Anti-stall architecture (AGC: Active Gain Control)
- Multi error detect functions (Thermal shutdown (TSD), Over current (ISD), Power-on-reset (POR), motor load open (OPD)).
- 5A motor Current (6A / 10A Overcurrent protection)
- LO0 and LO1 fault motor Led on front, also readable losing two input.
- 4 Out PNP 2.5A, short circuit protection.
- Fault PNP Led on front, also readable losing one input.
- 5 Protected Inputs, High enabled.
- All input can be interrupt.
- CPU ATSAM21G18 - Arduino ZERO M0 compatible.
- 48 Mhz, 32-bit ARM® Cortex®-M0+ processor.
- Flash 256KB, RAM 32K, Optional FRAM I2C 32Kbyte
- -40°C +85°C Working temperature

Utilization / Utilizzo

ARDUINO IDE <https://www.arduino.cc/en/main/software>
Install zero Compiler <https://www.arduino.cc/en/Guide/ArduinoZero>
Choose Board «Arduino/Genuino Zero (Native USB Port)»
Use the Arduino Zero reference guide.

3 ENCLOSURES, of different thicknesses:

3 CONTENITORI, con differente spessore:

Thin 17.5mm black, for the only card without accessories.
Medium 22.5mm green, for accessories such as Ethernet, RTC, Wi-Fi, Bluetooth, GSM modem.
Thick 35mm black, for accessories such as RS232 on DB9 female, Li-Po battery with battery charger.

*Sottile 17.5mm nera, per la sola scheda senza accessori.
Media 22.5mm verde, per accessori quali l'Ethernet, l'RTC, il Wi-Fi, il Bluetooth, il modem GSM.
Spessa 35.0mm nera, per accessori quali RS232 su DB9 femmina, Batteria Li-Po con caricabatteria.*

TB67S128 Stepper Controller Datasheet

Stepper mode

Modalità Stepper

```
struct {
    uint32_t AGC:1;      // AGC Enable
    uint32_t CLIM:3;     // AGC CURRENT LIMITER 0=45% 1=50% 2=55% 3=60% 4=65% 5=70% 6=75% 7=80%
    uint32_t FLIM:2;     // AGC Frequency limit function 0=off 1=225 Hz 2=450 Hz 3=675 Hz
    uint32_t BST:2;      // Current Boost Function 0=5 1=7 2=9 3=11 steps
    uint32_t RS_SEL:1;   // 0=ACDS (RS resistor less) 1=External sense RS resistor
    uint32_t GAIN_SEL:1; // Vref(gain) 0=1/5 1=1/10
} ISeq;

struct {
    uint32_t Torque:3;   // 0=100% 1=85% 2=70% 3= 60% 4=50% 5=40% 6=10%
    uint32_t MDTA:2;     // 0=Fast Decay: 50% (Fast Decay = OSCM × 8) 1=Fast Decay: 37.5%
                        // (Fast Decay = OSCM × 6) 2=Fast Decay Only 3=ADMD
    uint32_t Mot1dir:1;  // 0/1
    uint32_t Mot1:10;    // 0 to 1023
    uint32_t MDTB:2;     // 0=Fast Decay: 50% (Fast Decay = OSCM × 8) 1=Fast Decay: 37.5%
                        // (Fast Decay = OSCM × 6) 2=Fast Decay Only 3=ADMD
    uint32_t Mot2dir:1;  // 0/1
    uint32_t Mot2:10;    // 0 to 1023
} Param;
```

Iseq is sent from MotorInit () function;

ISeq viene inviato dalla funzione MotorInit();

Param is sent in the movement of the motor.

Param viene inviato nel movimento del motore.

The maximum speed with the MicrostepUp/Dw command is 90Khz Microstep Sec, with 24Mhz SPI.

The maximum speed with AccelStep setSpeed() is 58Khz Microstep Sec, with 24Mhz SPI.

The maximum speed with AccelStep moveTo() is 8.7Khz Microstep Sec, with 24Mhz SPI.

To get to 24Mhz SPI you need to edit a file in the compiler, and put 24000000 to the line 45.

The maximum speed, default is 12Mhz

La massima velocità con il comando MicrostepUp/Dw è di xxx Microstep Secondo, con 24Mhz di SPI.

Per arrivare a 24Mhz di SPI è necessario modificare un [file](#) nel compilatore, e mettere 24000000 alla riga 45.

La massima velocità, di default, è 12Mhz

Call the Microstep() function the first time or after another perifericha has used the SPI.

Chiamare la funzione Microstep() la prima volta oppure dopo che un'altra perifericha ha usato la SPI.

90Khz = MicrostepUp/Dw command

58Khz = AccelStep setSpeed()

8.7Khz = AccelStep moveTo()

Microstep	Pulse Rev	90Khz revolution	58Khz revolution	8.7Khz revolution
1	200			
2	400			
4	800			0.1 Sec
8	1600			0.2 Sec
16	3200			0.3 Sec
32	6400			0.7 Sec
64	12800			1.5 Sec
128	25600	0.28 Sec	0.44 Sec	2.9 Sec
256	51200	0.57 Sec	0.88 Sec	5.8 Sec
512	102400	1.14 Sec	1.76 Sec	11.7 Sec
1024	204800	2,27 Sec	3.53 Sec	23.5 Sec

Six Serial Communication Interfaces, each configurable to operate as either:

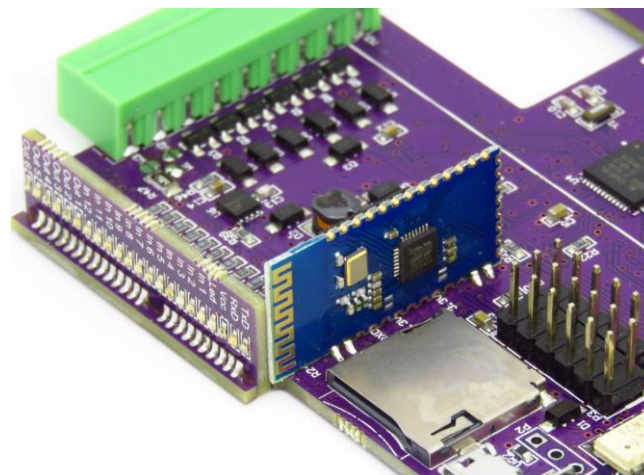
- USART with full-duplex and single-wire half-duplex configuration
- I2C up to 3.4MHz
- SPI
- LIN slave

<https://www.arduino.cc/en/Tutorial/SamdSercom>

<https://learn.adafruit.com/using-atsamd21-sercom-to-add-more-spi-i2c-serial-ports/overview>

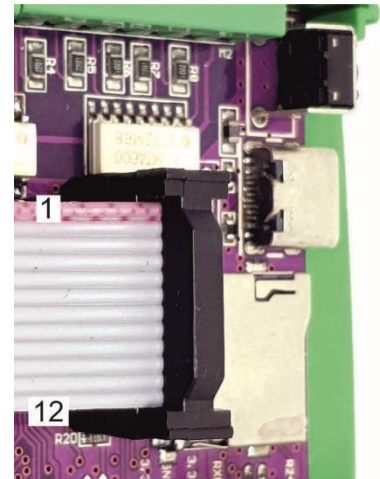
SerialUSB	USB	CS Addr	Reset	Int	Tx En
Serial	ESP-WiFi Bluetooth				
Serial1	RS485				D7
I2C	RTC DS3231				
"	OLED				
SPI	SD card reader	12			
"	W5500 ETH	10	11	---	
"	CAN BUS	10		11	

HC-06 -07 -08 BLUETOOTH ON SERIAL:



Optional 14pin Flat Cable Expansion:

- 1- MISO – D22
- 2- 3.3V
- 3- SCK – D24
- 4- MOSI – D23
- 5- Vin (12v/24v) After Diode
- 6- GND
- 7- SDA – D20
- 8- SCL – D21
- 9- Serial RxD – D25 - ESP WiFi - Bluetooth
- 10- Serial TxD – D26 - ESP WiFi - Bluetooth
- 11- Serial1 RxD – D0- PA11 - Rs485
- 12- Serial1 TxD – D1 - PA10 – Rs485
- 13- A0 Analog, need to open W11 Jumper
- 14- D45-SWDIO input/output, programming pin, cannot be high at boot.

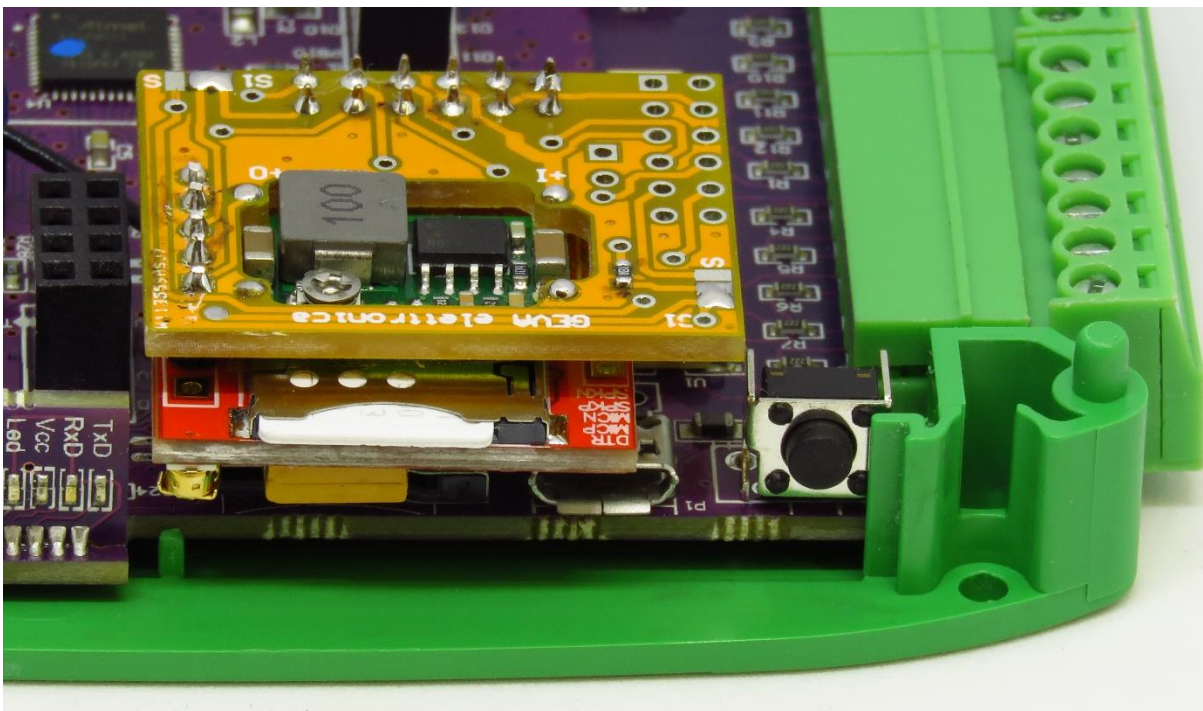


For use Serial1 RxD open W4 Jumper (Driver Rs485)

9 & 11 RxD → RxD of RS485 & RS232 module → TxD of SIM800L modem, ESP

10 & 12 TxD → TxD of RS485 & RS232 module → RxD of SIM800L modem, ESP

SIM800L MODEM ON SERIAL OR SERIAL1:



CHANGE TO NEXTION LIBRARY:

Line 35 of NextUpload.cpp, comment.

```
//#include <SoftwareSerial.h>
```

Line 29..37 of NexConfig.h, change

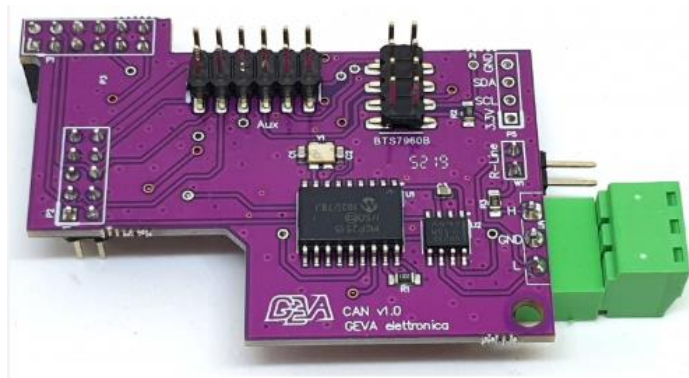
```
#define dbSerial SerialUSB
```

```
#define nexSerial Serial1 (or Serial)
```

CAN Bus:

MCP2515 module

p10 = VCC
p7 = GND
p4 = CS = D10
p8 = SO
p6 = SI
p2 = SCK
p5 = INT = D11



IO-Link Bus:

Chip ST L6362A

LoRA WIRELESS:

RA02 module



ETHERNET MODULE:

W5500 chip



