GENE-π
UNCHAIN YOUR LEGS

# GenePi Generator data sheet

| Review | Publisher | Validation | Date | Comment |
|---|---|---|---|---|
| Aa | BC | AND | 12.06.2023 | initial |
| Ab | AND | | 09.08.2023 | Connections |
| Ac | AND | | 09.10.2023 | Assembly and battery instructions |
| Ba | AND | | 09.03.2025 | Passage machine virvolt |

**Product data sheet**
**SAS Genepi**
**SIREN : 949479042**
**94 rue des oiseaux 69620 Le Breuil**

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# 1. General features :

- Maximum continuous power (human rated in W): 600W @48 V
- Max. pedaling cadence (rpm/V): 2.7 rpm/V
- Maximum user torque (in Nm): 35 A phase, i.e. 90 Nm max approx.
- Transmissible electric current (in A): 15 A maximum on battery
- Maximum battery voltage: V Float 53.5 V *(can be modified on request)*
    - ➢ Li Mn: max 13S
    - ➢ LiFePo4: max. 15S
- Module cut-off voltage (overvoltage protection): 53.5 V *(can be modified on request)*
- Protection class: IP 54
- Weight: 4 kg

***No overspeed protection (be careful if the generator is connected to anything other than legs)***

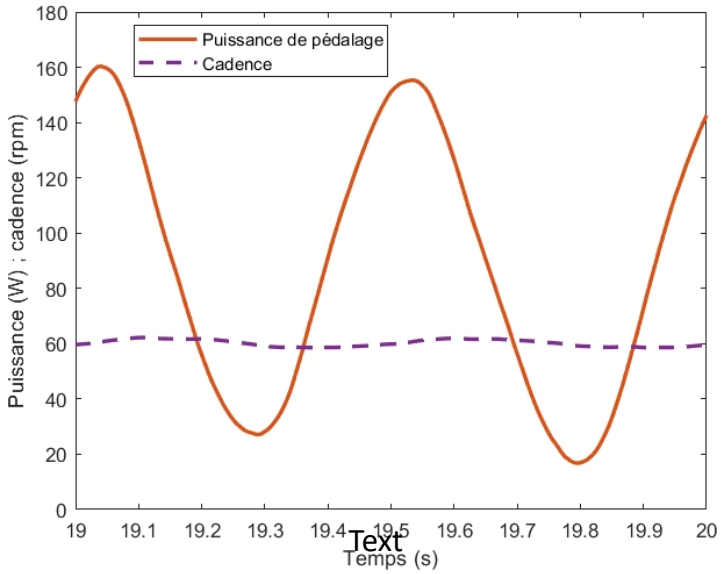


*Fig 1: Typical example of user power on a GénéPi generator*

# 2. General information

**Visual :**


*Fig 2: Visual a GénéPi generator*

**Mounting interface :**

- Standard BSA 68 and 73 mm
- Bottom bracket
  - ➢ Inside diameter: 34 mm
  - ➢ Outside diameter:≤ 48 mm
  - ➢ Length between 68 and 75 mm

**Mechanical :**

- Integrated freewheel prevents the generator from rotating in the opposite direction
- Two-stage mechanical multiplication included in the module: the generator is ready for use

**Control algorithm :**

- GenePi proprietary natural pedaling algorithm
- Force variation range (continuously adjustable via potentiometer)
  - ➢ Minimum force: 50% of our standard
  - ➢ Maximum force: 150% of our standard
  - ➢ Can Bus control available
- Homothetic control (generator configured with inputs and outputs to enable assembly a homothetic vehicle). available on request

**Efficiency :**

- Typical: 80%.

**Available inputs / outputs**

- Pedelec sensor
- Potentiometer: vary effort
- CAN Bus
- Options for pedal-based control :
  - ➢ one input: for speed control (ADC)
  - ➢ one output: torque information (PWM signal, duty 10 - 90))

**Compatible battery :**

48V batteries are fully compatible with our generator. 36V batteries are also compatible, but our standard electronics don't protect them against overvoltage (full battery, you can have up to 53.5V generated by the generator). On 24V batteries, compatibility is also limited. In addition, the maximum pedaling speed may be limited.

All battery types are acceptable (Li-ion, lead-acid, etc.). However, it is the installer's responsibility to check the battery's capacity to absorb the load (for the record, a human produces a few hundred watts maximum).

Standard electronics are designed fit 48V batteries. A CV (constant voltage) voltage limitation is available at 54V. This limitation is not limiting and allows the use of 36V batteries, but these must be protected against overcharging otherwise.

# 3. Connections :

PAS connector (not powered by the board, requires an external 3.3V or 5V supply on the red wire)

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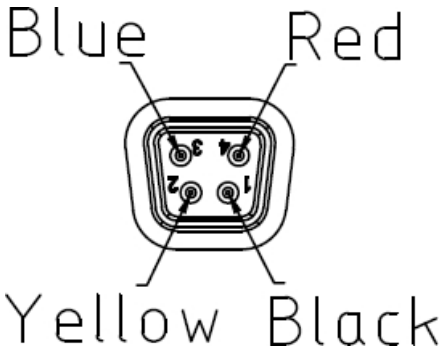
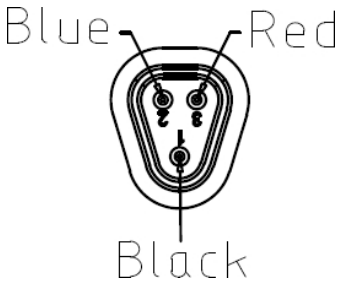
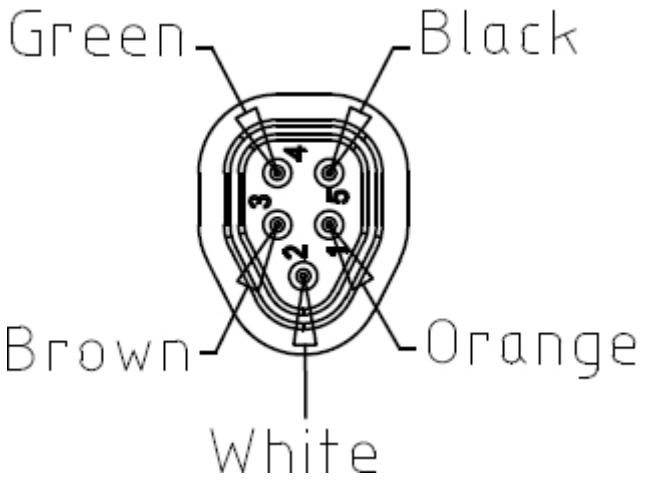



| Pin number | Function |
|---|---|
| 1 (black) | GND |
| 2 (yellow) | Signal A |
| 3 (blue) | Signal B |
| 4 (red) | 3.3 or 5V power supply (to be supplied separately) |

Force variation connector :




| Pin number | Function |
|---|---|
| 1 (Black) | GND |
| 2 (Blue) | Pedaling hardness setpoint |
| 3 (Red) | 3.3V |




| Pin number | Function |
|---|---|
| 1 (orange) | CAN H |
| 2 (white) | 5V |
| 3 (brown) | ND |
| 4 (green) | CANL |
| 5 (black) | GND |

# 4. Communication protocols

**Data recovery protocol details (UART)**

NB: (Note that the UART is no longer wired on the latest versions, but may still be available on pins 5 and 6 of the controller's 7-pin connector):

- Protocol configuration details: Baud rate 115200
- Accessible screen :

| Start Address | Variable | Type | Conversion report |
|---|---|---|---|

| | | | |
|---|---|---|---|
| 4 | Averaged phase current | float32 | 100 |
| 8 | Average 'battery' current | float32 | 100 |
| 20 | duty | float16 | 1000 |
| 22 | ERPM (electrical cycles) | float32 | 1 |
| 26 | input Voltage | float16 | 10 |

**CAN protocol details**

the controller is able to understand the following CAN SID frame (Standard ID and not Extended)::

- ID: 0x00000300
- Data[0] (first 8-bit byte)= 1,2,3,4,or 5, allowing the generator resistance level to be managed PRIORITARILY on the potentiometer (in the absence of a collected frame, the potentiometer is the default setting).
- BAUD: 500kHz

# 5. Installation instructions :

**Mechanical assembly :**

The generator can be mounted on any BSA-standard bottom bracket.

step 1: remove the bottom bracket from the bike (if fitted):

- Remove chain, chainrings etc ...
- Dismantle the BSA housing using a special grooved tool

step 2: reassemble the generator

- insert the generator into the housing
- insert the anti-slip washer
- insert the motor clamping ring and tighten the
- install the ring cover

**Electrical installation :**

The generators arrive at your premises equipped  an XT30 female coded connector.

Connection is made by connecting the generator directly to your battery.

If your BMS is equipped with a bi-directional current BMS, simply connect the+ to the+ and the - to the - (e.g. to the battery, or by splicing the dc cable to the motor, etc.).

If your BMS is equipped a separate charging and discharging port, connect the generator to the charging port.

> ***Warning!*** *The product is not equipped a fuse.*

# 6. FAQ