

### Helvest® Flex GAW400 module - user manual

#### 1. General product presentation

##### 1.1 Module for driving GAW400 turnouts

The GAW400 card drives up to 4 switches motor with slow motion and common anode circuit, i.e. it drives turnout motors that have one wire connected to the positive "+" common pole and two wires for the "-" power supply. The positions of the motor (P1 and P2, see the diagram in fig. 1) depend on which of these two wires is actually connected to the "-" pole.

For example, MP1 motors work with this technology.

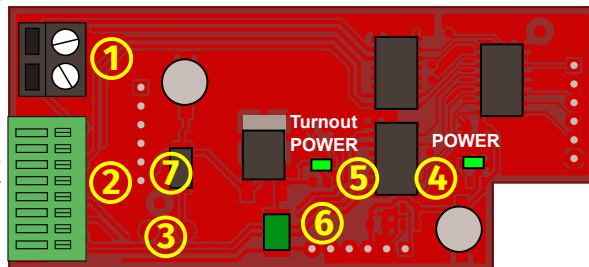
This is a "layout" module for the HP100 motherboard. It must be plugged into the specific "layout" connectors of the HP100 board and is automatically identified by it. To insert the module, turn off the HP100 card power, make sure the connectors are aligned and press lightly until the module is fully inserted into the slot.

##### 1.2 Electrical Connections

All of the following operations must be carried out with the power supply switched off.

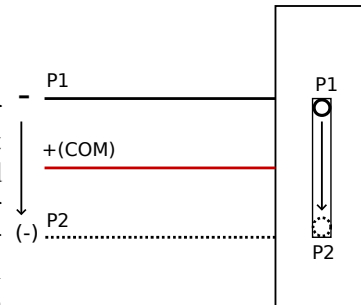
The module automatically supplies a DC voltage of 12V, coming from the HP100 board power supply and suitable to drive most of the available turnout drives.

With some simple modifications the module can be adapted for separate power supply (see section 4).



**Fig. 2**

**Fig. 1**



The common pole (the one with a "+" sign indicated by COM in figure 1) is the same for all motors and must be connected to terminal no. 1 (see figure 4). Both inputs of the terminal can be used for this connection.

**WARNING:** This connection is REQUIRED for the correct operation of the module. If this element is not connected, the devices seem to work the same, but the module will be damaged in a short time. Damage due to failure to connect the common pole to terminal block no. 1 will not be covered by the warranty!

The selection of movements depends on terminal block no. 2 in Fig. 2. The wires relating to the two positions of the same switch (those named P1 and P2 in fig. 3) must be inserted into the two outputs A and B. (example, 1A and 1B, 2A and 2B). To insert the wire, peel it off by about 5 mm, press the terminal block button with a small slotted screwdriver and thread the wire into the corresponding hole.

Check the instructions of your motor/drive for the wires or contacts needed to power it.

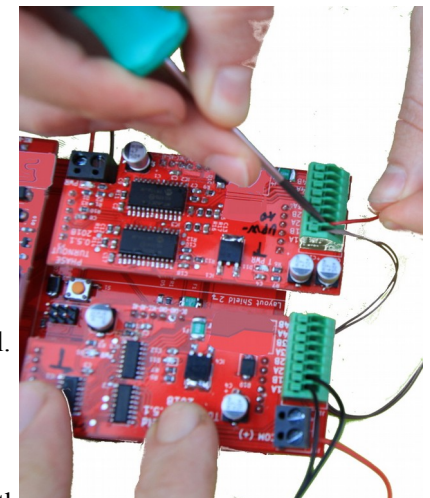
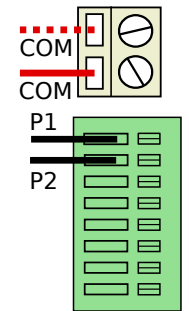
**WARNING:** NEVER supply accessories with other power sources when connected to the GAW module, even when the GAW module is switched off!

##### 1.3 Mounting the PCB on the layout

The complete board must be mounted in such a way that it DOES NOT touch anything during operation. In particular, it must not come into contact with any metallic or flammable material. For temporary installations, it can be placed on a non-flammable insulating surface (plastic, glass, ceramic floor, etc...).

For fixed layouts, mount it on the structure by screwing the HP-100 onto a wooden surface with

**Fig. 3**



the screws and spacers provided. (figure). This operation must be done before inserting the GAW400 module (if additional cards have already been inserted, they can be removed gently without any problems).

## 2. MODULE OPERATION

### 2.1 Normal operation

Once all connections have been made, power up the circuit board. Green LEDs 4 and 5 indicate that the power supply is correct.

The operation modes, switching time etc. are adjustable but they depend on the installed "net" module, so check the instructions of your "net" module.

### 2.2 Setting the switching time

The switching time must be sufficient for the motor to complete the movement, but it must not be too long not to force the motor itself. Most drives have a limit contact, i.e. they automatically cut off the power supply when the movement is complete. Carry out some tests to ensure that the movement is complete, if it is not, lengthen the switching times as explained in the instructions on the "net" module.

### 2.3 Current absorption and protection

The module supports actuators designed for digital operation. Older motors or motors designed for other uses can absorb higher currents and therefore the board does not drive them.

In any case, the module is equipped with protections against excessive current consumption; if you use a motor that requires too much current, the module does not get damaged but removes or reduces the power supply. After the interruption, the module restores its normal functionality in a few seconds.

### 2.4 Drive Movement Sequence

The module executes the individual commands in real time, i.e. as soon as they are received. If several commands are sent simultaneously or in rapid succession to the same module, they are executed in sequence (i.e. it drives one motor at a time in the

order in which it received the commands). Therefore, take into account that the total switching time of all the motors, if activated in sequence, can be of a few seconds. On the one hand, this measure increases realism (in the real world, the switches are not operated at the same time) and, on the other hand, it avoids unbalances in the current absorption of the accessories, preventing the electrical system of the layout from being overloaded.

## 3 . TROUBLESHOOTING

**To troubleshoot power/wiring issues, etc., please see troubleshooting of HP100 motherboard.**

Problem	Possible causes and solutions
The module is plugged in but not responding, and the power LEDs remain off.	If the HP100 board is powered (green LED on the HP100), the module is inserted incorrectly. Check for correct insertion. The module is in contact with metal parts.
Module is plugged in, power LEDs are lit, but one or more motors do not move	Check the correct connection of the motors and the insertion of the wires in in the connectors. There are problems with the address assigned to the board. See troubleshooting the NET card. The motor is not working properly. If necessary, try removing the contacts and testing it with a separate power supply (battery, modeling AC transformer, etc.). NEVER try the motor with an external power supply while this is connected to the decoder!
The motor works but does not reach the end of its range	Check for mechanical obstructions on the turnout blades or moving apparatus in general. Increase the switching time (see "net" tab).

### 4 . ADVANCED USE (for experienced users)

#### 4.1 External drive power supply

When the module is used with the DCC system, the turnouts draw power from the DCC cables by default.

For large size layouts with a lot of accessories and thus many decoders, it makes sense to supply the turnouts and signals with another power source.

For this purpose it is possible to modify the DCC100 module: The procedure is explained in the DCC100 module manual in section 5.2.

### 5. TECHNICAL SPECIFICATIONS

Board Type:	Power module for accessories requiring continuous power, for HP100 motherboard
Power supply:	supplied by the motherboard. Optional external power supply, regulated to 12V.
Signalling LED:	presence of voltage, presence of accessory power supply.
Voltage supplied:	12V DC
Max. rated current:	500 mA for every actuator
Firmware HP100	>1.2

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