

Instructions for the Helvest®FleX DM100 Module

1. General Product Overview

1.1 Warnings

The boards are not toys and are not suitable for children under the age of 14. They contain small parts that may be swallowed.

Do not leave the product unattended in a location accessible to children.

Before using the boards, carefully read the instructions for use.

Be sure to make the electrical connections as described. Incorrect connections may damage the boards or pose a danger to the user.

Under no circumstances should the products be powered in a way that differs from the instructions, and particularly, never exceed the voltage of 20V. Powering with inappropriate voltages can pose serious risks to the user and present a fire hazard.

The product has functional sharp edges and parts.

Do not leave the product powered without supervision.

At the end of the product's lifecycle, do not dispose of it in the trash. Return it to the manufacturer according to the terms stated in the sales conditions.

1.2 Declaration of Conformity

We, Helvest Systems GmbH, Route des Pervenches 1, CH-1700 Fribourg (Switzerland), declare under our responsibility that the DCC100-E product complies with the requirements of the Electromagnetic Compatibility Directive (2004/108/EC).

The product complies with the standards set by the harmonized regulations EN55032:2015 and EN55024:2010+A1:2015.

1.3 DM100 Automation Module

The DM100 module is a device that enables simple automation of miniature railway layouts by automatically associating incoming information (such as a button press or the presence of a train on a track) with an action to be performed (such as switching a turnout, a servo motor, a signal, a relay, etc.).

It is a "net" type module for the HP100 motherboard. It must be inserted into the appropriate "net" connectors on the HP100 motherboard and is automatically recognized by it.

To insert the module, turn off the power to the HP100 motherboard, ensure the connectors are aligned, and apply light pressure until the module is fully inserted into the slot.

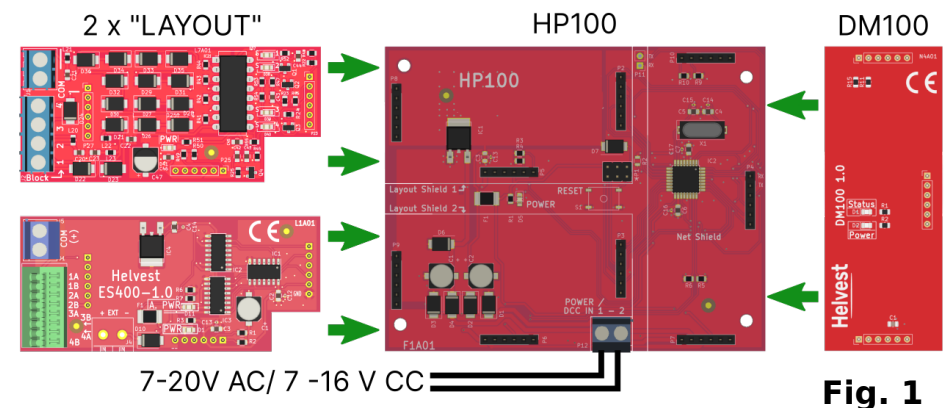
2. Module Installation

2.1 Electrical Connections

All of the following operations should be performed with the power off.

The HP100 motherboard must be powered with any voltage from 7 to 20 V AC or from 7 to 16 V DC. A digital bus such as DCC can also be used, although it is not recommended for large layouts.

Insert the DM100 module into the "net" slot on the HP100 motherboard (fig. 1).



Nei due alloggiamenti per i moduli "Layout" vanno inseriti due moduli da associare. Uno deve essere un modulo che rilevi dati.

Examples of data detection modules are:

- AB400 for detecting the presence of trains.
- KB800 or KB800-L for detecting button presses.

The other "Layout" module must be a module that controls devices. For example:

- ES400 for switching signals.
- EMW400, GAW400, UPW400 for switching turnout motors.
- SM400 for servos.

The connections of the two "Layout" modules mentioned above to the corresponding devices are described in the instructions of the chosen module.

2.2 How to Use the "Layout" Module Connections

The "Layout" modules have 4 inputs or outputs, divided into two pairs: A and B. This means that if, for example, you connect 4 turnouts, you have:

- Turnout 1: Position A and B.
- Turnout 2: Position A and B.
- Turnout 3: Position A and B.
- Turnout 4: Position A and B.

For signals, A and B correspond to red and green, for servos, either position, and so on.

The KB800 and KB800-L modules have two buttons, one for position A and the other for position B of each device.

The AB400 train presence detection module follows this logic: if a train is detected = position A, if the train is not detected = position B.

3. Device Operation

3.1 Operating Principle

Once the module is powered, it is ready to operate.

When a signal is received on the data input module, the corresponding output on the actuator module is activated.

Examples:

- When button 1A is pressed → output 1A is activated (for example, a servo motor or a turnout will be set to a certain position).
- When a train is detected in section 3 → output 3A is activated. When the train is no longer detected in section 3 → output 3B is activated.

3.2 Adjusting the "Layout" module options

The paired modules may include adjustments: for example, for some turnout modules, you can adjust the activation time, for servo motor modules, you can adjust the speed and set initial and final positions, etc.

With the DM100 module, it is not possible to fine-tune these settings, as it is a simplified module for basic automation.

For more precise movements than the preset ones, these settings can be recorded via a computer by temporarily replacing the DM100 module with an MV100 module and connecting everything to the PC via the MVC10 adapter.

The settings made this way will remain stored in the decoder even after the DM100 module is restored.

3.3 How to switch two positions of an accessory on different track sections

Accessories for model railways are switched in two ways, which we call A and B. For example, the two positions of a turnout, or two different aspects of a signal (red/green).

With the AB400 module, as explained, the two positions A and B correspond to the presence or absence of a train.

It may be necessary to switch the two positions of an accessory when the train is on two different track sections. For example, let's say you want to switch a turnout to position "1" when the train is on one track section, and to position "2" when the train is on another section.

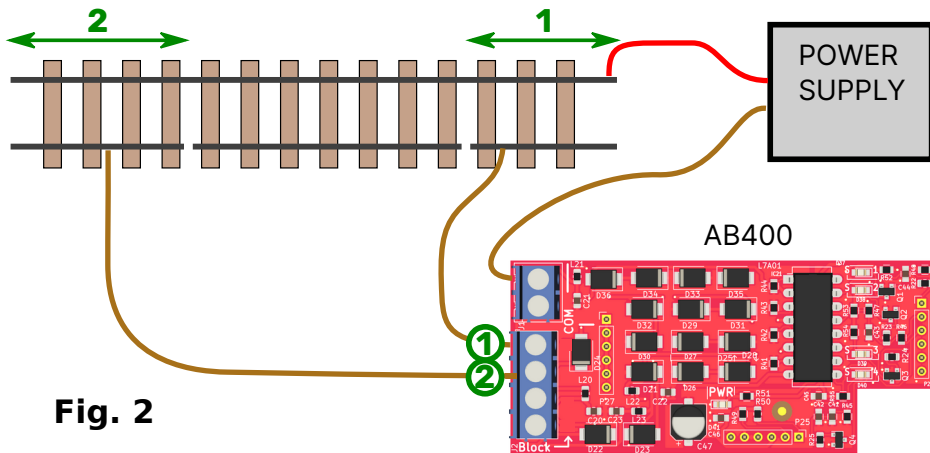


Fig. 2

The two sections must be connected to the AB400 module, as shown in Figure 2.

The movement of the turnout must be connected to the adjacent "layout" module, but the two wires should not be connected to the A and B outputs of the same port. They must be connected one to output 1A and the other to output 2A (fig. 3). In this way:

- When the train occupies section 1, the turnout is activated to position 1A.
- When the train leaves section 1, output 1B is activated, but it is not connected to anything.
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- When the train occupies section 2, the turnout is activated to position 2A.
- When the train leaves section 2, output 2B is activated, but it is not connected to anything.

Obviously, this logic is applicable to other situations, such as relays, signals, or servos.

4 . Troubleshooting

To resolve issues related to power/connectivity, etc., refer to the troubleshooting section of the HP100 motherboard.

Problem	Possible causes
The module is inserted but does not respond, and the power LEDs remain off.	If the HP100 board is powered (green LED lit on the HP100), the module is inserted incorrectly. Check the proper insertion. The board is in contact with metal parts.
The module is inserted, the power LEDs are on, but the accessory connections do not match.	Verify that the input and output actions are correctly connected (input 1 to output 1, etc.).

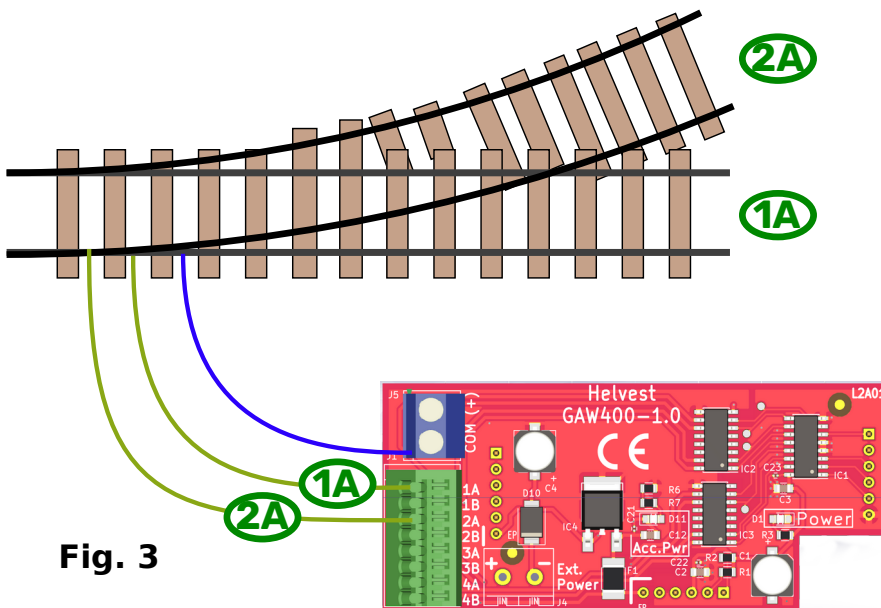


Fig. 3

5. TECHNICAL SPECIFICATIONS

Device type: MVnet connection module for HP100 motherboard
Operating voltage: 5V, supplied by the motherboard
Operating temperature: 0 °C - 40 °C

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