Instructions for Helvest GAD10 Relay Board (2025 Version)

1. General Product Overview

1.1 Warnings

The boards are not toys and are not suitable for children under 14 years old. They contain small parts that may be swallowed.
Do not leave the product unattended within reach of children.
Before using the boards, carefully read the user instructions.
Make sure to make electrical connections as described. Incorrect connections can damage the boards or pose a risk to the user.
Under no circumstances connect the products in ways other than those indicated in the instructions, and never exceed a voltage of 20V. Power supplies with inappropriate voltages can cause serious risks to the user and fire hazards.
The product has functional sharp edges and parts.
Do not leave the product powered on unattended.
At the end of the product's life, do not dispose of it in household waste but return it to the manufacturer according to the terms of sale.

1.2 Declaration of Conformity

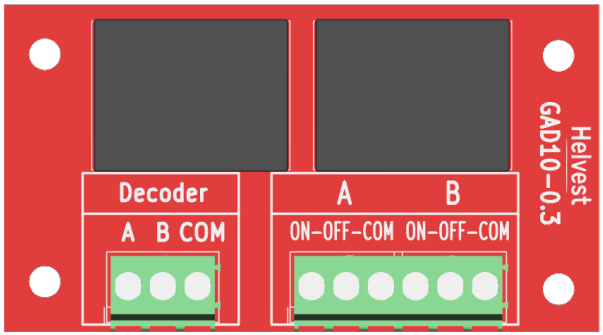
We, Helvest Systems GmbH, Route des Pervenches 1, CH-1700 Fribourg (Switzerland), declare under our sole responsibility that the GAD10 product complies with the Electromagnetic Compatibility Directive (2004/108/EC).
The product complies with harmonized standards EN55032:2015 and EN55024:2010+A1:2015.

1.3 GAD10 Board

The GAD10 board includes two independent 12V-powered SPDT monostable relays. Monostable relays are electrically controlled switches activated by a pulse applied to the "decoder" terminal (see fig. 1). When current is applied to terminal A, the first relay is activated. When current is applied to terminal B, the second relay is activated. Both relays can be activated simultaneously.

1.4 Connection to Accessories

Fig. 1



Accessories must be connected to the left terminals labeled "A" and "B".
These relays function as switches, connecting the COM contact to one of the ON or OFF outputs, according to the following criteria:

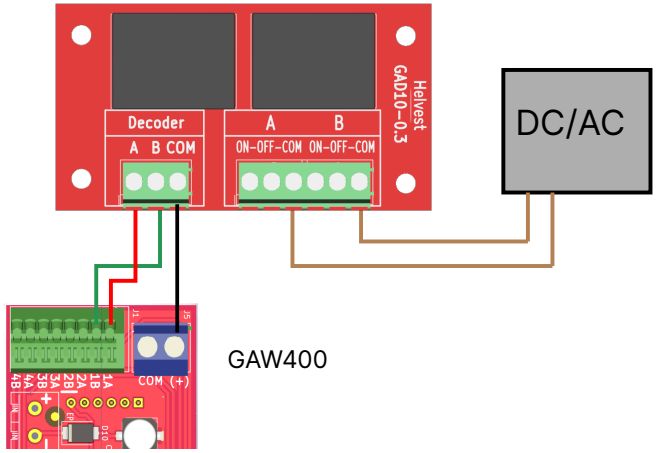
- Relay inactive: COM contact connects to OFF.
- Relay active: COM contact connects to ON.

2. Relay Control with a Decoder

2.1 Pulse Control with a GAW400 Module

Fig. 2

If you want the relay to be controlled by a short pulse (i.e., remain active only for a few seconds), you must use a Helvest decoder with a GAW400 module, connected as shown in figure 2.



Thus, when a pulse is sent to the decoder's output A, relay A is activated for a few seconds; when a pulse is sent to output B, relay B is activated for a few seconds.

The following table summarizes the contacts that are

activated. In the first column, "0" means the decoder is inactive, "A" indicates activation of output A, and "B" indicates activation of output B. The ✅ symbol shows which decoder output is active.

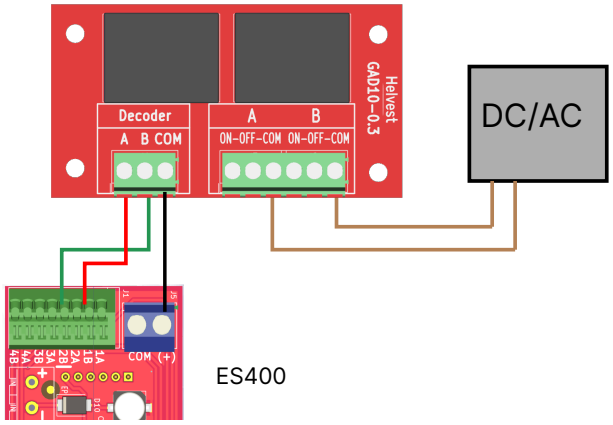
GAW 400	OUTPUT			
	A on	A off	B on	B off
0		✅		✅
1A	✅			✅
1B		✅	✅	

2.2 Continuous Control with ES400 Module

In this case, the relay remains activated indefinitely until the state of the ES400 module is changed. This is the typical scenario, for example, when you want to power a section when the signal is green; you can then connect the "decoder" contacts directly to the same ES400 module as the signal.

Another example of this type of use is controlling the polarity of a turnout frog. When the relay is OFF, it is polarized with one pole; when it is ON, it is polarized with the opposite pole.

Fig. 3



Both contacts must be connected to two different outputs of the ES400 module. In the example of figure 3, they are connected to outputs 1B and 2B, leaving outputs 1A and 2A unconnected. Thus, the relay is normally in the "OFF" position and is activated only when the ES400 module switches to the "ON" position.

These examples and others, as well as additional information documents, are gradually published on the Helvest.ch website under the "Journal" section.

The following table summarizes the contacts that are activated in the case of the decoder with ES400, based on the connection example described above and shown in figure 3.

ES 400	OUTPUT			
	A on	A off	B on	B off
1A		✅		
1B	✅			
2A				✅
2B			✅	

2.3 Relay Control Without Decoder

If you want to control the relay without using a decoder, you must supply a strict 12 V DC voltage to the "Decoder" terminal according to the following instructions:

- "Decoder" terminal, "COM" contact: +12 V DC
- "Decoder" terminal, "A" and "B" contacts: ground. When ground is connected to terminal A and/or terminal B, the relay activates; when disconnected, the relay deactivates.

3. Connection warnings

WARNING: It is essential to **NEVER CONNECT** any accessories to the terminal reserved for the decoder. The decoder must always be connected solely and exclusively to the designated terminal, and must never come into contact with the accessories, under penalty of immediate damage.

4. Other Usage Examples and Applications

Additional examples, as well as other informational documents, are being gradually published on the Helvest.ch website in the "Journal" section. For specific applications or in case of questions, please contact our support service.

5. TECHNICAL SPECIFICATIONS

Device Type:	Board with two independent monostable SPDT relays
Operating Voltage:	Relay coil: 12 V DC
Output contacts:	max 50 V
Maximum Output Current:	15 A
Operating Temperature:	0 °C - 40 °C

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