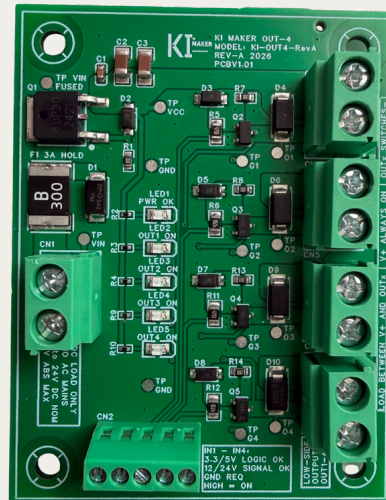


QUICK START GUIDE OUT-4

A practical first-use guide for safe wiring, first power-up, and a successful first switched-load test with the KI Maker 4-channel low-side DC output driver.



5-24 VDC LOAD SUPPLY

4 LOW-SIDE MOSFET OUTPUTS

1.0 A CONTINUOUS / CHANNEL

NO AC MAINS | DC LOADS ONLY | LOAD BETWEEN V+ AND OUT_x | COMMON GROUND REQUIRED | NOT ISOLATED RELAY CONTACTS

What This Guide Helps You Do

Power the board safely for the first time.

Confirm PWR OK before you connect a controller or load.

Share ground with the controller, then test one GPIO and one load first.

Avoid the most common misuse cases: AC input, relay-style output wiring, missing common ground, and loads returned to DC–.

IMPORTANT

This guide does not replace the Owner's Manual. For full wiring details, safety precautions, ratings, and troubleshooting, refer to the Owner's Manual at ki-maker.com/docs.

Before You Start

WARNING — LOW-VOLTAGE DC OUTPUT DRIVER ONLY

You Need

- A 5–24 VDC power supply with correct polarity and adequate current capacity.
- A controller with 3.3 V or 5 V GPIO and a common ground connection.
- A small screwdriver and insulated M3 standoffs for mounting.
- For first testing: one small DC load such as an LED strip, relay coil, or solenoid within the 1.0 A published channel rating.

⚠ CRITICAL RULES — READ BEFORE POWER-UP

Use 5–24 VDC on CN1 for normal operation. 30 VDC is absolute maximum, not normal operating voltage. No AC mains anywhere on the board.

V+ is always on. OUTx switches the load negative to ground.

Wire each load between its paired V+ and OUTx terminals. Do not return the load to DC–.

CN2 GND must be common with the microcontroller ground.

OUT1–OUT4 are not isolated relay contacts and are not short-circuit protected.

STOP IMMEDIATELY IF..

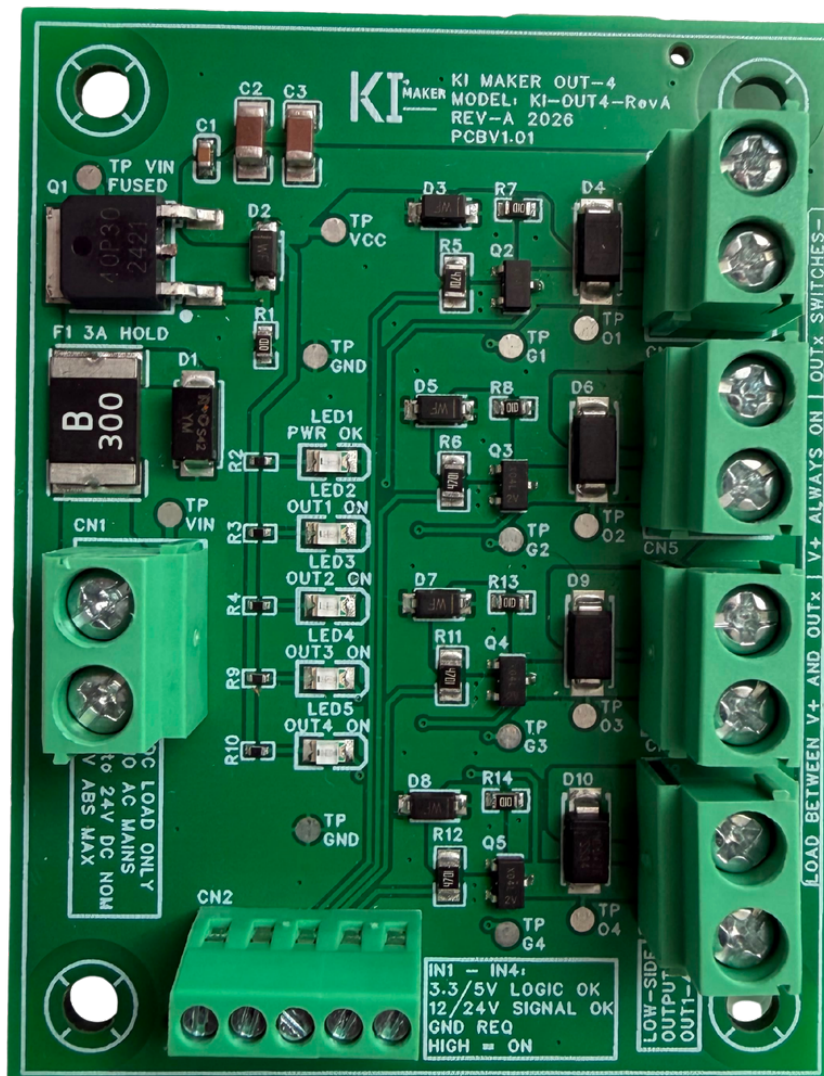
- You are not sure about CN1 polarity, load wiring, or the controller ground connection.
- PWR OK does not light, a channel LED behaves unexpectedly, or a MOSFET, fuse, or connector becomes unexpectedly hot.
- You are about to connect AC mains, anything above 30 VDC, or wire OUTx like a floating relay contact.

Find the Right Connector First

Use the board in your hand as the final authority. This map helps you identify the six connector groups before wiring.

4 Independent Low-Side
N-MOSFET Channels

PWR OK + OUT1-
OUT4 STATUS LEDs



CN1
DC+ / DC-

CN3 V+ / OUT1
CN4 V+ / OUT2
CN5 V+ / OUT3
CN6 V+ / OUT4

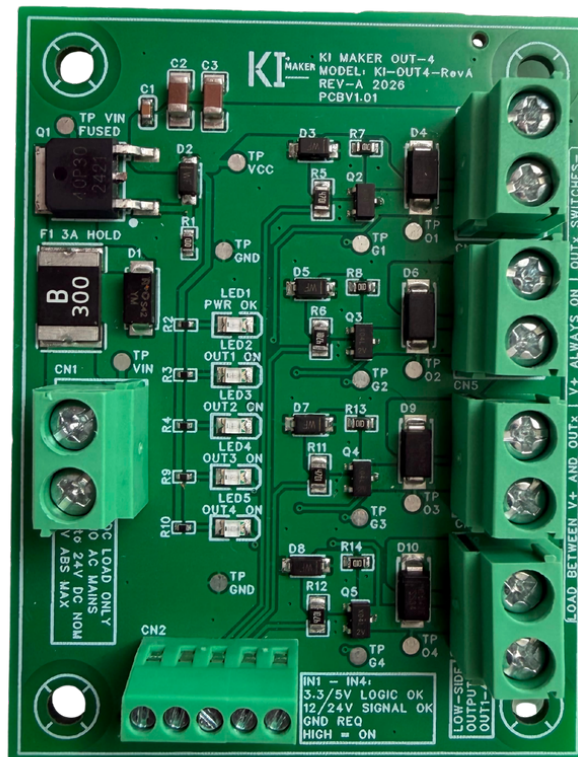
CN2
IN1-IN4 + GND
3.3 V / 5 V LOGIC

OUT-4 Connector Group Table

Connector Group	Quick Use Note
CN1 — DC+ / DC-	Main 5–24 VDC load supply input. Verify polarity before power-up.
CN2 — IN1 / IN2 / IN3 / IN4 / GND	Controller logic inputs. Use 3.3 V or 5 V GPIO. HIGH = channel ON. Controller ground must connect to CN2 GND.
CN3 — V+ / OUT1	Channel 1 load connection. Load + to V+, load – to OUT1.
CN4 — V+ / OUT2	Channel 2 load connection. Load + to V+, load – to OUT2.
CN5 — V+ / OUT3	Channel 3 load connection. Load + to V+, load – to OUT3.
CN6 — V+ / OUT4	Channel 4 load connection. Load + to V+, load – to OUT4.
PWR OK LED	Indicates input power is present after the board input protection/fuse path.
OUT1–OUT4 LEDs	Illuminate when the corresponding channel is commanded ON.
Low-side switching	OUT1–OUT4 switch the load negative side to ground.
V+ terminals	V+ is the positive load-supply rail and remains powered while the board is powered.
Common ground	Controller ground must be connected to CN2 GND.
Inductive loads	Use the paired V+ and OUTx terminals so onboard flyback protection is across the load.
Current limit	1.0 A continuous per channel; 3 A board total through the shared PPTC fuse.
Not relay contacts	OUT1–OUT4 are not isolated or floating contacts.
No short protection	Individual channels are not short-circuit protected.

A Basic First Hookup

The safest first test is one DC supply, one controller GPIO, and one small load on OUT1. Add the remaining channels only after OUT1 behaves normally.



Always verify connector labels on the physical board before wiring.

5-24 VDC Supply

Correct polarity
5-24 VDC normal
30 VDC absolute max

Common Ground

Controller GND
must join CN2
GND

DC Load ≤ 1.0 A

Load + to V+
Load - to OUT1

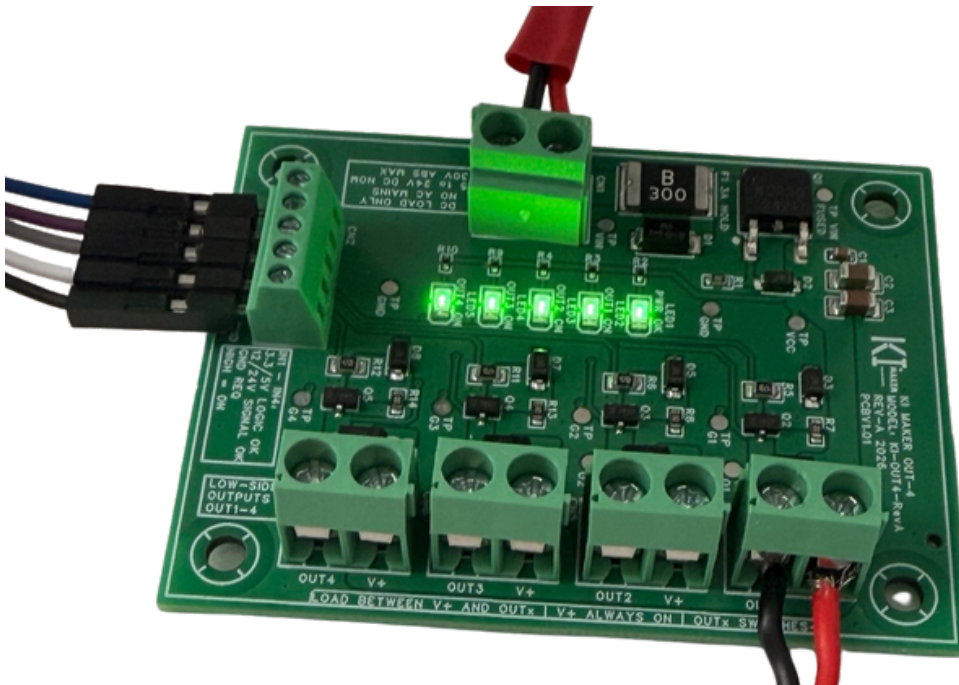
Controller GPIO

GPIO to IN1
GND to GND

MOST IMPORTANT WIRING RULE

Connect each load positive wire to that channel's V+ terminal and the load negative wire to OUTx. Do not wire OUT1-OUT4 like floating relay contacts. For inductive loads, use the paired V+ and OUTx terminals so the onboard flyback protection is connected across the load.

5-Minute First Power-Up



LED1: PWR OK

LED2: OUT1 ON

LED3: OUT2 ON

LED4: OUT3 ON

LED5: OUT4 ON

OUT-4 powered from a 5-24 VDC load supply.

This is the fastest safe path to confirm the board is alive and one output switches correctly before you attach more loads.

1. Inspect the silkscreen: CN1 is power, CN2 is logic, and CN3–CN6 are the four V+ / OUTx load pairs.
2. Mount the board on insulated M3 standoffs away from conductive surfaces and debris.
3. Connect only the 5–24 VDC supply to CN1 with correct polarity.
4. Apply power and confirm LED1 PWR OK lights. If not, stop and check polarity and F1.
5. Connect controller GND to CN2 GND, then connect one GPIO to IN1. HIGH = ON; 3.3 V logic is sufficient.
6. Wire one load to CN3: load + to V+, load – to OUT1. Do not return the load to DC–.
7. Drive IN1 HIGH. LED2 should light and the load should turn on. Then add channels one at a time.

EXPECTED FIRST-USE RESULT

- PWR OK illuminates when the DC supply is connected.
- With controller GND connected to CN2 GND, driving IN1 HIGH illuminates the OUT1 status LED and turns the connected load on.
- Driving IN1 LOW turns OUT1 and the connected load off.
- No connector, fuse, or MOSFET shows unexpected heating during the initial test.
- After OUT1 operates correctly, add the remaining channels one at a time.

Released Limits and Next Steps

Released Ratings

OUT-4 Rating	Released Limit / Requirement
Load supply input	5–24 VDC normal operating range
Absolute maximum input	30 VDC — do not use as normal operating voltage
Output channels	4 independent low-side MOSFET outputs
Continuous channel current	1.0 A maximum per channel
Board total current	3 A total through shared PPTC fuse F1
Logic inputs	3.3 V / 5 V logic · HIGH = ON

THERMAL / CURRENT NOTE

Published continuous rating is 1.0 A per channel, with 3 A board total through shared PPTC fuse F1. Channels are not short-circuit protected. Verify MOSFET and connector temperature during initial operation, especially at higher channel currents, during PWM operation, or in enclosed installations.

If Something Looks Wrong

- Remove power immediately if wiring is uncertain, PWR OK does not light, a channel behaves unexpectedly, or a MOSFET, fuse, or connector becomes unexpectedly hot. Verify CN1 polarity, load placement between V+ and OUTx, and the common controller ground before repowering.

What to Read Next

- Owner's Manual: Full wiring rules, feature details, ratings, and troubleshooting.
- Specification Sheet: Released customer ratings and use boundaries.
- Mechanical Overview: Mounting pattern, board outline, and enclosure planning.