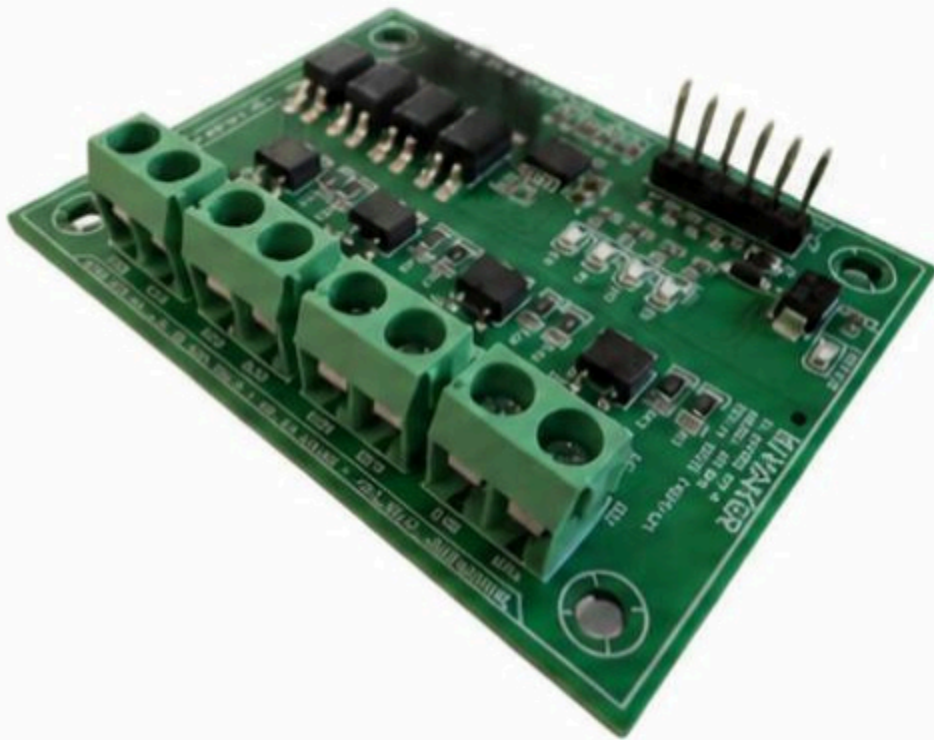


### KI Maker IN-4

Released customer specification sheet for four protected, optically isolated 9–30 VDC inputs to 3.3 V or 5 V controllers.



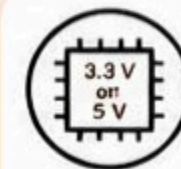
#### 9–30 VDC Inputs

Four polarity-independent 9–30 VDC field inputs for 12 V and 24 V sensors, PLC outputs, and switches. No AC mains.



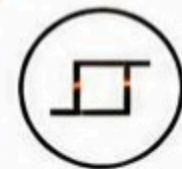
#### Optical Isolation

LTV-817S optocoupler per channel. Functional isolation only. No copper signal path from field to logic.



#### 3.3 / 5 V Logic

User-supplied VLOGIC on H1. Active-high OUT1–OUT4 for controller GPIO. OUTx does not drive loads.



#### Schmitt Conditioned

22 k $\Omega$  pull-up, 10 nF filter, and SN74HC14 Schmitt trigger on every channel for clean logic edges.



#### Per-Channel Protection

SMBJ33CA bidirectional TVS and MB10S bridge on every field input. 2  $\times$  4.7 k $\Omega$  current limiting.



#### Field-Input LEDs

LED3PWR shows VLOGIC. LED1/2/4/5 follow IN1–IN4. Field ON = LED ON = OUTx HIGH.

- Field: 9–30 VDC, polarity independent; 12 V / 24 V nominal
- Isolation: LTV-817S per channel; functional isolation only
- Logic: 3.3 V or 5 V on H1 VLOGIC; 4  $\times$  active-high OUTx
- Protection: SMBJ33CA TVS + MB10S bridge + 2  $\times$  4.7 k $\Omega$  per channel

- Conditioning: 22 k $\Omega$  pull-up + 10 nF + SN74HC14 Schmitt
- Indicators: LED3PWR plus LED1/2/4/5 for IN1–IN4
- Connectors: 4  $\times$  5.0 mm field; 1  $\times$  2.54 mm 1 $\times$ 6 logic header
- Dry contacts need external DC excitation; PNP/NPN/PLC supported



Docs & Manual

[www.ki-maker.com/docs](http://www.ki-maker.com/docs)



**Use Limits | Low-voltage DC only. No AC mains. OUTx is GPIO only. Functional isolation – not a certified safety device.**



DETAILED SPECIFICATION

Released customer-facing ratings, boundaries, connection rules, and mechanical data for KI Maker IN-4 Rev-A, PCBV1.01.

| Category              | Specification                                                                                                                                                   |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product purpose       | Four-channel protected opto-isolated DC input interface for reading real-world low-voltage switches, sensors, and relay contacts with 3.3 V or 5 V controllers. |
| Field input channels  | 4 independent two-terminal field input pairs: CN1-CN4.                                                                                                          |
| Field input range     | 9-30 VDC released Rev-A range. DC only. Typical use with 12 V and 24 V field signals.                                                                           |
| Input polarity        | Polarity-insensitive DC field input pairs via bridge rectifiers.                                                                                                |
| Logic supply          | 3.3 V or 5 V user-supplied VLOGIC at H1.                                                                                                                        |
| Output behavior       | OUT1-OUT4 active high: valid field input ON = logic HIGH.                                                                                                       |
| Output purpose        | Microcontroller / logic input pins only. Not load-driving outputs.                                                                                              |
| Field transient clamp | SMBJ33CA TVS diode per field-input channel.                                                                                                                     |
| Input conditioning    | LTV-817 optocoupler per channel, 22 kOhm pull-up, 10 nF filter.                                                                                                 |
| Output cleanup        | SN74HC14 Schmitt-trigger buffer with 220 Ohm series output resistors.                                                                                           |
| Status LEDs           | VLOGIC power LED plus one activity LED per input channel.                                                                                                       |

| Area                                                                                                                                                                                                                                                                                                                                                                                                                                            | Specification                                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Logic rail protection                                                                                                                                                                                                                                                                                                                                                                                                                           | Fused VLOGIC input with TVS/Schottky protection network.                                                            |
| Field terminals                                                                                                                                                                                                                                                                                                                                                                                                                                 | Four 2-pin screw-terminal pairs, CN1-CN4, 5.0 mm pitch.                                                             |
| Logic connector                                                                                                                                                                                                                                                                                                                                                                                                                                 | H1 1×6, 2.54 mm pitch: VLOGIC, GND_LOGIC, OUT1-OUT4.                                                                |
| Mechanical                                                                                                                                                                                                                                                                                                                                                                                                                                      | 50.00 mm × 65.00 mm board. Four M3 mounting holes; 40.00 mm horizontal × 55.00 mm vertical center spacing.          |
| Mounting / environment                                                                                                                                                                                                                                                                                                                                                                                                                          | Indoor low-voltage electronics. Use insulated standoffs and protect from conductive debris.                         |
| Below 9 V operation                                                                                                                                                                                                                                                                                                                                                                                                                             | Not a published rating. Released field-input specification remains 9-30 VDC.                                        |
| Not intended for                                                                                                                                                                                                                                                                                                                                                                                                                                | AC mains, safety-rated isolation, emergency-stop, medical/life-safety, automotive safety, or direct load switching. |
| Safety / Boundaries                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                     |
| IN-4 is a low-voltage DC input interface. Field inputs are 9-30 VDC only. Do not connect AC mains. Field input pairs are polarity-insensitive for normal DC use. Optical isolation is functional and is not a certified safety barrier, e-stop, SIL, or PL input. OUT1-OUT4 are logic outputs for controller input pins only and must not drive relays, solenoids, lamps, motors, or other loads. Power H1 VLOGIC from 3.3 V or 5 V logic only. |                                                                                                                     |