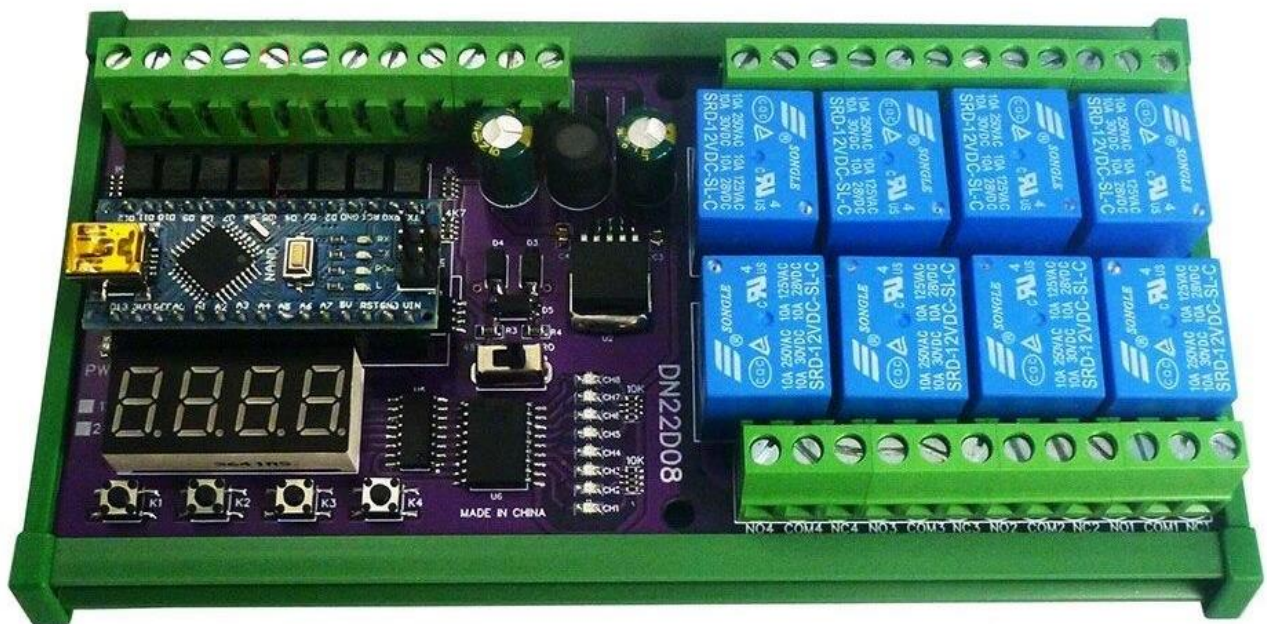




# ARD-PLC-8CH PLC SHIELD, 8 CHANNEL



[www.vikingmachinery.co.nz](http://www.vikingmachinery.co.nz)

## 0.0 Safety Statement

All machinery, especially CNC or automated machinery, has inherent dangers and risks. It is the responsibility of the system designer to ensure that any systems built using any Viking Machinery Ltd. products are safe for use. Any technical information is provided as a reference only, and does not constitute a recommendation as to the fitness of use in any particular application.

Viking Machinery Ltd. strongly urges customers to seek expert advice when dealing with potentially dangerous electrical voltages and sources of mechanical energy. Information contained in this document does not constitute a substitute for expert advice.

This device is **not** intended to switch low voltage (known as “Mains voltage”). If you need to switch a high power load, use this device to switch a contactor or relay of appropriate rating.

Under no circumstances should this product ever be used in a safety critical application.

## 1.0 Product Specifications

- Supply Voltage – 24VDC
- Operating Current – 15mA – 230mA
- Voltage Ripple – 10% peak to peak maximum
- Number of Relay Channels – 8
- Number of External Inputs – 8
- Number of Onboard Push Button Inputs – 4
- Display – 4 digit, 7 segment display
- Processor – Supplied with Arduino Nano, ATmega328P (Old Bootloader)
- Size – 150mm x 72mm x 19mm Including DIN rail mount

## 2.0 Scope of Document

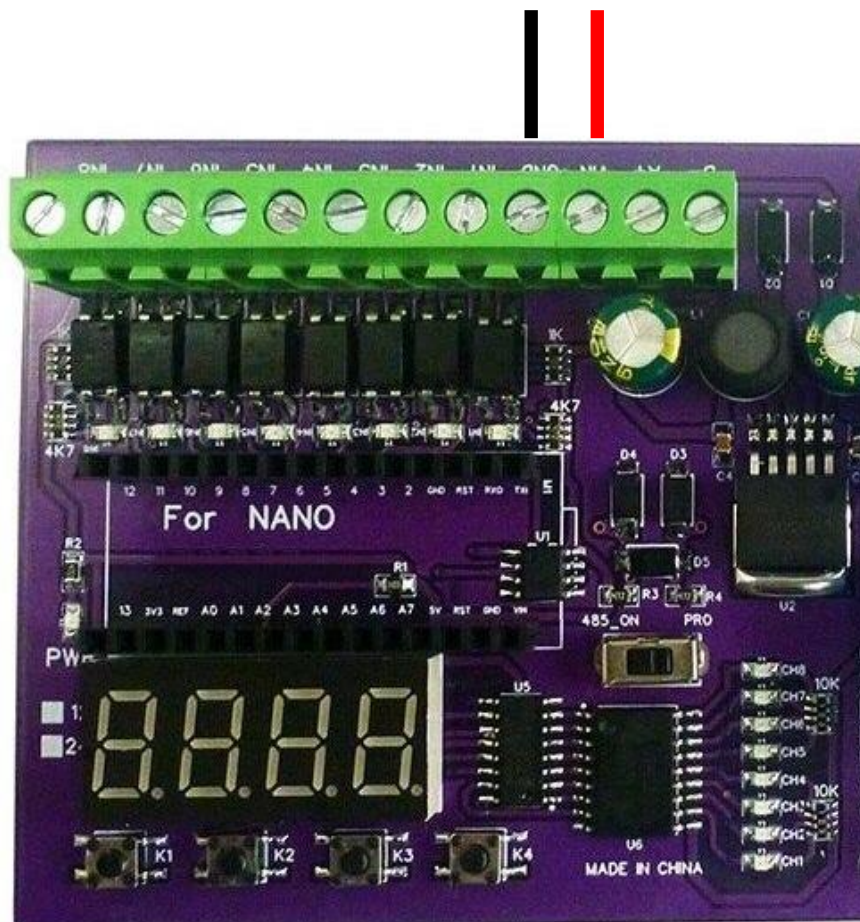
This document is designed to give an overview of the wiring options for the ARD-PLC-8CH Arduino PLC shield. Wiring examples are given for typical examples that a user may encounter. These are by no means exhaustive, but are a good starting point for beginners. At the end of the manual a demonstration program is given for programming the device.

## 3.0 Power Connection

Your PLC shield requires 24V DC power to operate. We recommend using a high quality power supply.

NOTE: We have found that this board will work with 18V, so you can use 2x 9v batteries for testing.

VIN – 24V DC + Terminal  
GND – 0V DC - Terminal

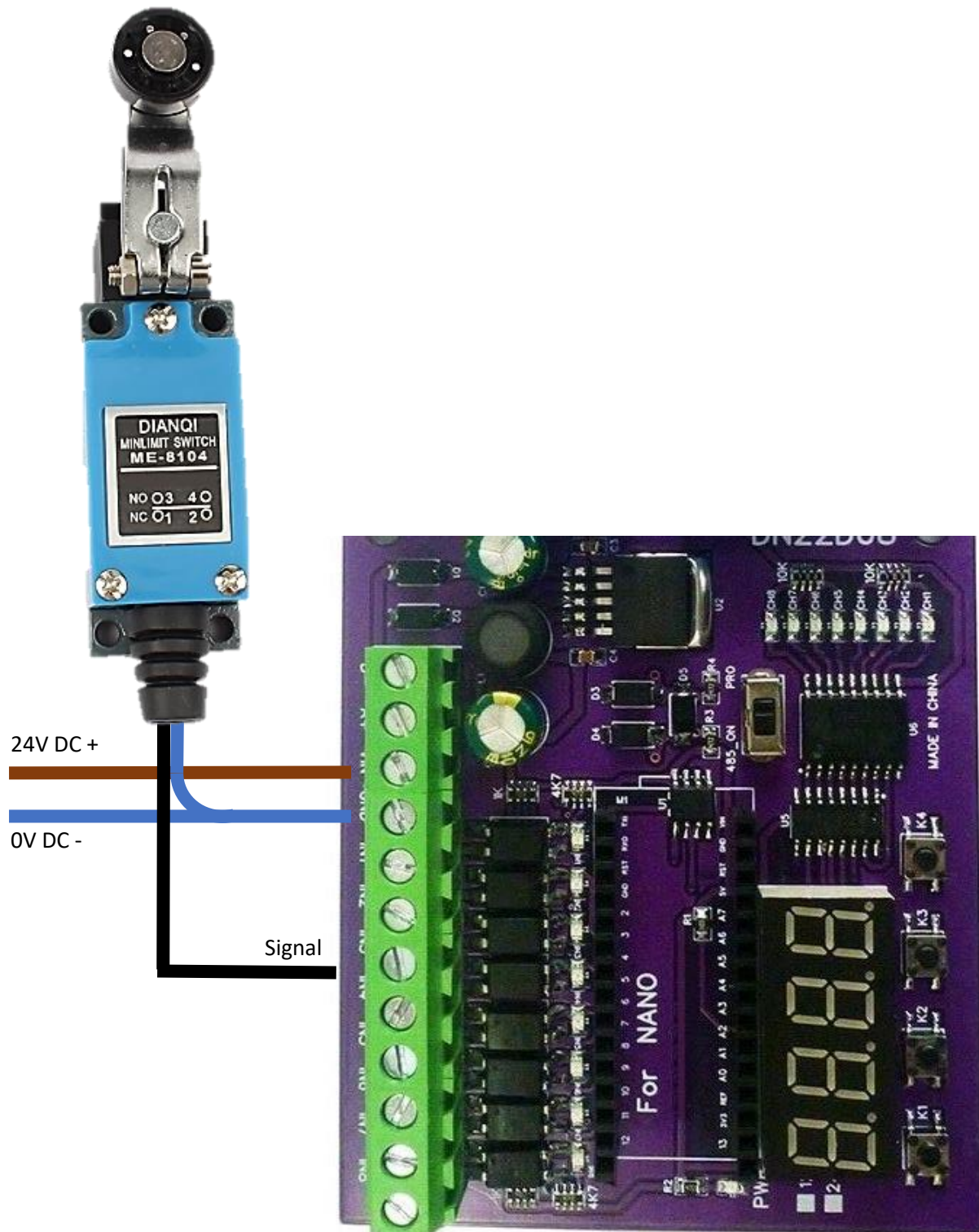




## 4.0 Wiring to a Switch

The input terminals of the board need to be switched to 0V for the shield to register an input. We recommend that a beginner wired their switch to the NORMALLY OPEN (NO) contact set of their switch. This is the “failsafe” wiring configuration for this shield and so is least likely to give unexpected behaviour on start up.

The PLC shield supports up to eight proximity sensor inputs (marked IN1 – IN8 on the board), so the wiring below can be repeated for each input number.

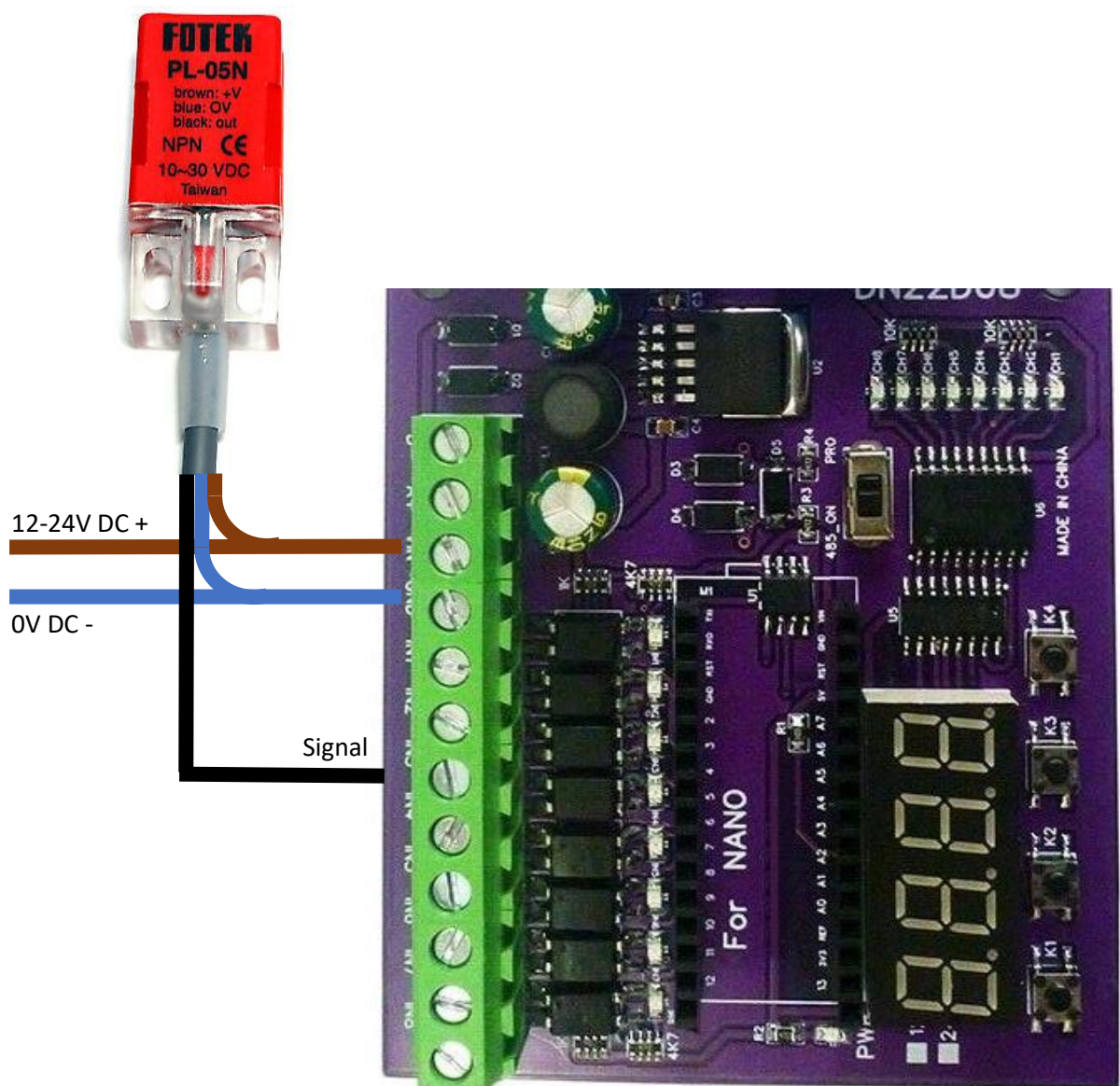


## 5.0 Wiring to a Proximity Sensor

Wiring to the NPN proximity sensors that Viking Machinery sells is easily accomplished in the manner shown below. The PLC shield will run on 24V DC, which is the same voltage as the proximity sensors, so wiring is very straight forward. These sensors can be powered from the same source as the shield, and then the black signal line is used to switch the input terminal to ground.

Once again, it is better to use normally open (NO) sensors to avoid unexpected behaviour on start up.

The PLC shield supports up to four proximity sensor inputs (marked IN1 – IN8 on the board), so the wiring below can be repeated for each input number.

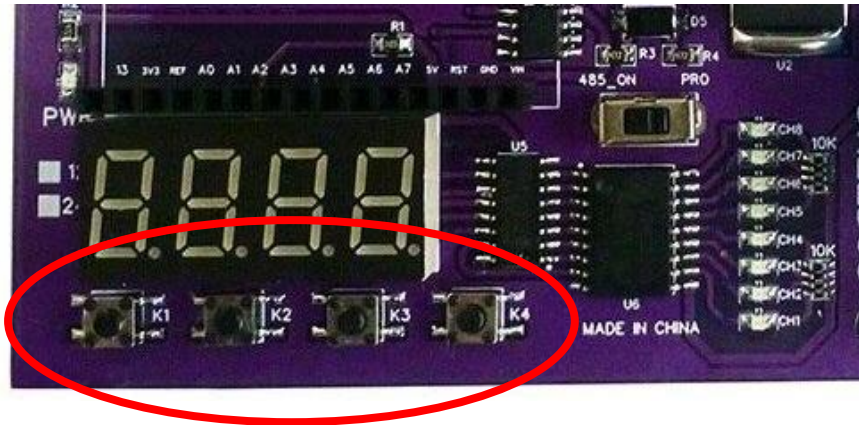




## 6.0 Onboard Input Buttons

The board contains four individual input buttons. These can be used to change settings on the board, start or stop a program, or in any other way you choose to program.

These inputs are numbered 1-4, from left to right as shown. They are marked K1-K4 (Key one – key four) on the PCB.



## 7.0 Onboard Segment Display

The board contains four individual seven segment display digits. These can be used to display any number and many letter characters from the program.

These digits are numbered 1-4, from left to right as shown.



## 8.0 Outputs

The PLC shield has eight relay outputs. These are numbered from 1 to 8.

Each relay output has three terminals; Common (COM), Normally Open (NO), and Normally Closed (NC). When the relay operates, the connection between COM & NC will break, and the connection between COM & NO will make.

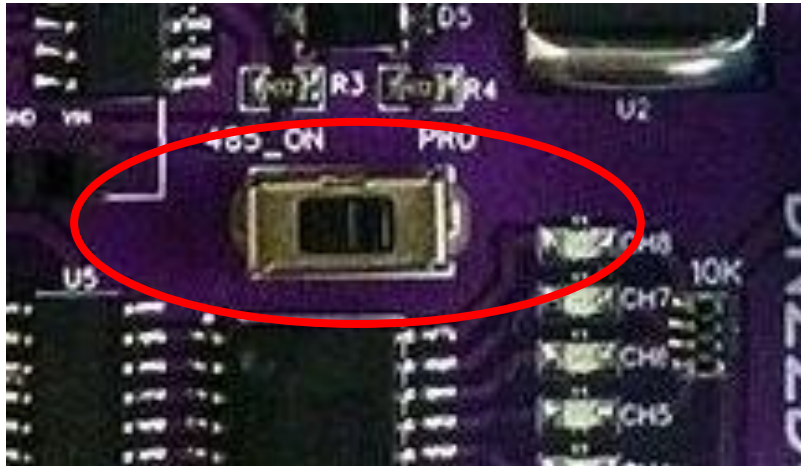
NOTE: These relays are not appropriate for switching high power loads, or hazardous voltages. If you need to control a power load such as a heater, please use an external contactor that is switched by the onboard relay.



## 9.0 Demonstration Program

### BEFORE YOU START:

There is an onboard switch to select between programming mode and run mode. Make sure that the switch is set to PRO when uploading a switch.



Below is a download link for our sample sketch for this product.

<https://github.com/Viking-Machinery/PLC-Shield>

The .7z zip file contains both the require FlexiTimer2.h library that is needed for the example program, and the 8\_Channel\_PLC\_Relay\_Demo.ino Arduino file.

This program demonstrates use of each push button, each tube, each 24V input, and each output relay. We have written this code to be easy to follow and modify for your own use.

NOTE: This board supports RS485 communication as a master device. We HAVE NOT figured out how this works yet! We do have a “Chinglish” example from our supplier however. Please email us – [sales@vikingmachinery.co.nz](mailto:sales@vikingmachinery.co.nz) – if you would like a copy of this. If you do manage to make this work, please let us know so we can update this manual and our examples!



## 7.0 Reference Links

Viking Machinery - Home Page

[www.vikingmachinery.co.nz](http://www.vikingmachinery.co.nz)

Viking Machinery - TradeMe Store

<https://www.trademe.co.nz/Members/Listings.aspx?member=4906214>

Viking Machinery - Email

[sales@vikingmachinery.co.nz](mailto:sales@vikingmachinery.co.nz)

Viking Machinery - Social Media

<https://www.instagram.com/vikingmachinery/>

<https://www.cgtrader.com/viking-nz>

<https://www.youtube.com/@vikingmachinery>

<https://www.thingiverse.com/VikingNZ/about>

<https://grabcad.com/james.hussey-3>

Viking Machinery - Git Hub

<https://github.com/Viking-Machinery>