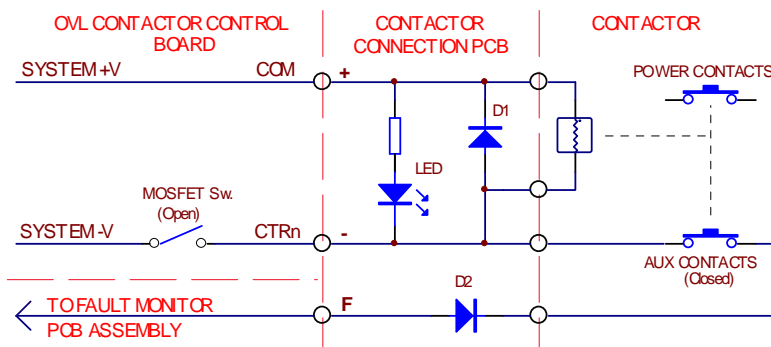


### OVL Contactor Fault Monitor

The **Micha** OVL Contactor Fault Monitor is designed to trigger an alarm relay if a contactor fails to operate. When operating under extreme conditions, such as a high ambient temperature or high current, the most likely failure scenarios are the coil failing, or the main power contacts welding in a closed position. As auxiliary contacts fitted to the contactor are mechanically operated when the contactor is energised, either failure mode can be detected by monitoring the state of the contacts.

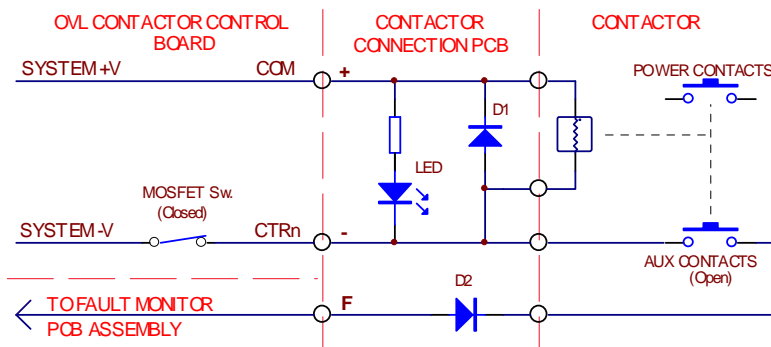
### Theory of Operation

In both Positive and Negative Common system polarities, the contactor coil is fed with the System +V supply, with the negative being switched by a Mosfet switch on the OVL Control board.



**Fig. 1: Contactor not energised**

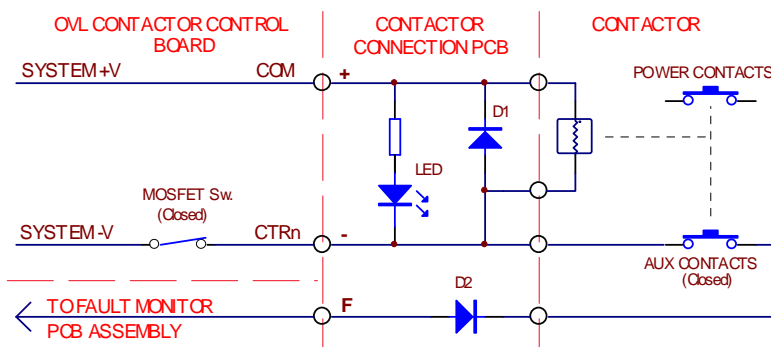
**Fig. 1** shows the contactor in the de-energised state. The Mosfet switch is open. Diode D1 is a fly-back diode across the contactor coil. Diode D2 blocks any positive feed and so the connection to the Fault Monitor board can be considered open circuit.



**Fig. 2: Contactor energised, contacts operated**

**Fig. 2** shows the contactor in the expected energised state if it is functioning correctly. The Mosfet switch has closed, the contacts have operated, and with the Auxiliary Contacts switched open, the connection to the Fault Monitor board is open circuit.

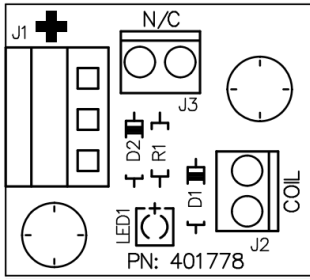
Note: When a contactor energises, the Mosfet switch is turned rapidly on and in the time it takes for the contacts to change state – typically 40mS for the SW210 series – a ‘fault’ signal will briefly appear on the output causing the input LED on the Fault Monitor to flash. This is to be expected and does not indicate a fault.



**Fig. 3: Contactor energised, contacts not operated**

**Fig. 3** shows the contacts in the event the contactor has not operated despite the Mosfet switch being closed. In this case, the signal to the Fault Monitor is pulled low to the System -V supply via the Mosfet and Auxiliary contacts.

### Contactor Connection PCB with Fault Monitor Output



**Fig. 4: Contactor Connection Pcb (Drawing)**

Contactors supplied by Micha with the Auxiliary Contact fitted for Fault Monitoring have a 3-way green connector as shown in the photo (right):

- +** : 'COM' connection from the OVL Control PCB
- : 'CTR' switched output from the OVL Control PCB
- F** : Connection to the Fault Monitor Board

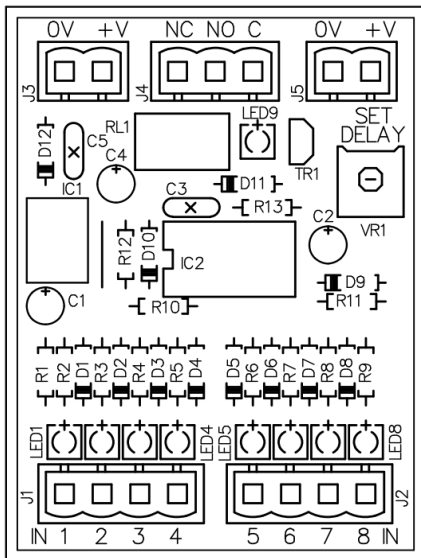


The outer two contacts of the Auxiliary Switch are the normally-closed pair.

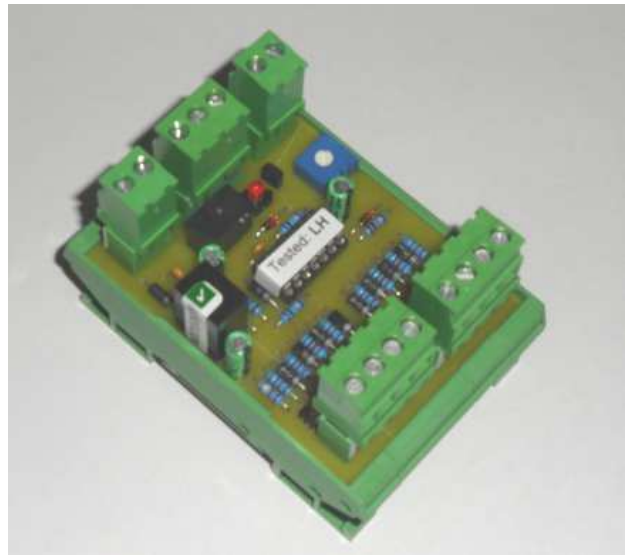
**Fig. 5: Contactor Connection Pcb (Photo)**

### Fault Monitor Assembly

The Fault Monitor is supplied as a pcb assembly fitted to a din-rail housing, with overall dimensions of 83 x 57mm.



**Fig. 6: Contactor Fault Monitor Assembly (Drawing)**



**Fig. 7: Contactor Fault Monitor Assembly (Photo)**

### Connections:

**Power:** A DC supply of between 18V and 65V should be made to either J3 or J5. These are connected in parallel to facilitate daisy-chaining additional boards. Note: The 0V should be connected to the System -V supply as used on the OVL Control board. An on-board diode protects the Fault Monitor from reverse polarity power connections.

**Inputs:** Up to eight inputs can be connected to the monitor, and in any order. In the event of a contactor fault, the input will be pulled low, and will be indicated by the LED in line with the input. VR1 allows a delay of approximately 1 to 8 seconds to be set before the alarm relay operates. The alarm automatically resets when the fault input is removed.

This assembly should only be used in conjunction with the appropriate Contactor Connection pcb, or with a suitable and equivalent circuit.

Part Number: 102 387	Supply Voltage	Supply Current	Supply Current	Relay Contacts
Contactor Fault Monitor	18 to 65VDC	~120mW (quiescent)	~270mW (in alarm)	1A at 24VDC