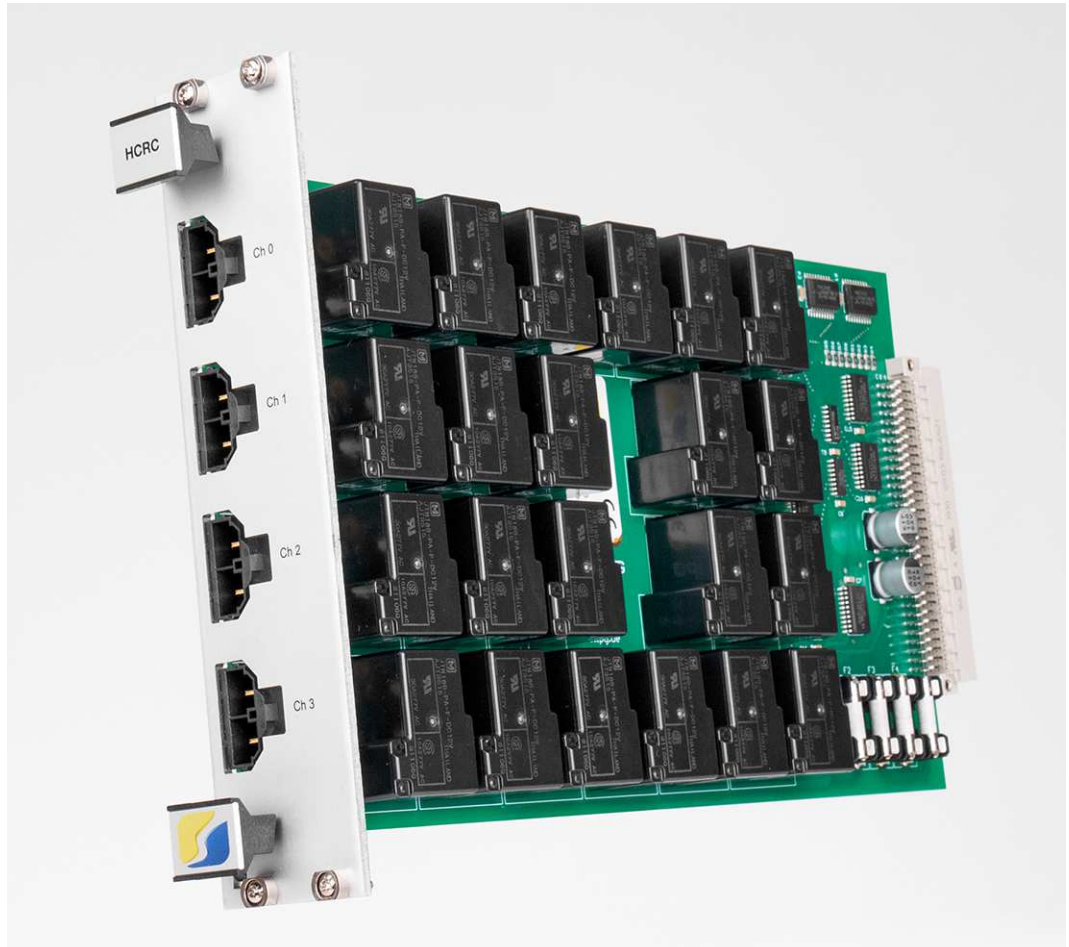


6.6 High Current Relay Card (HCRC)



6.6.1 Features

- Voltage up to 50V
- Current up to 30A
- 4 channels
- Connectable with IL1, IL2, IL4 and IL5
- Fuses between channels and interconnection lines to avoid overload of the ILs
- The ILs of several HCRCs can be electrically interconnected internally by bolting them together with spacer bolts.
- Input and output of all channels opened when switched off

6.6.2 Connection Matrix

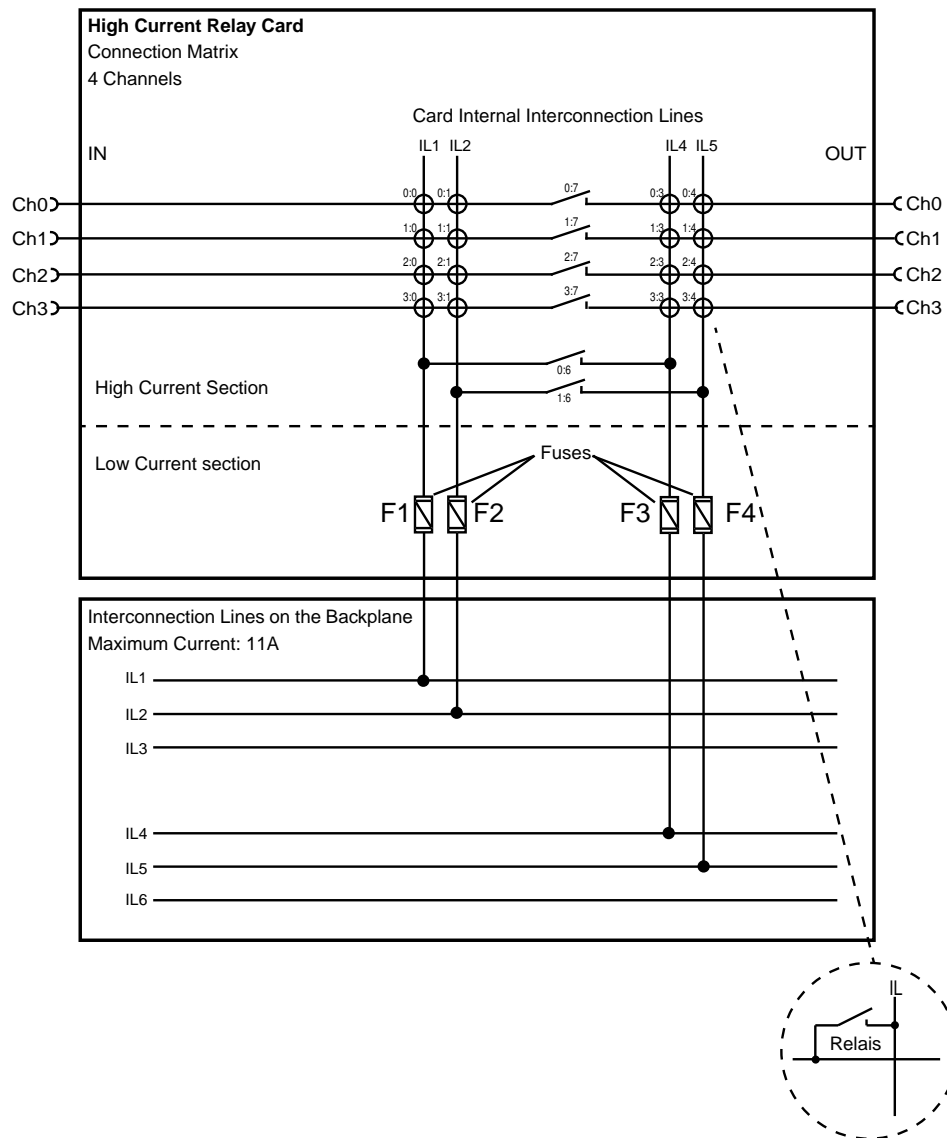


Figure 6.8: Connection Matrix of the High Current Relay Card (HCRC)

6.6.3 Description

One channel of a Standard Relay Card gives the possibility to connect input signals and output signals as follows.

- Connect / disconnect input and output of one channel.
- Connect to several inputs located on the same card as well as on various cards.
- Connect to several outputs located on the same card as well as on various cards.
- Connect any input with any output located on the same card as well as on various cards.

As a special feature this card contains its own internal interconnection lines. With these several channels the card can be connected and charged with the maximum load of the High Current Relay Card.

The internal interconnection lines of the High Current Relay Card can get connected with any signal of the other cards. These connections are fused by the micro-fuses F1 .. F4.

This fuses are rated only for preventing overload of the backplane, but not for preventing overload of other involved cards.



When connecting a signal on the High Current Relay Card with a signal on another card the maximum current of the card with the smallest load must be considered.

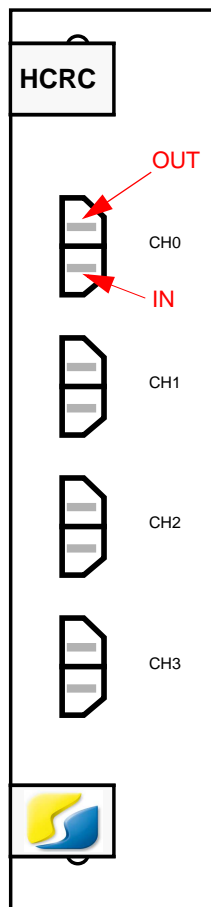
It is possible to remove all the fuses. When doing so, it is no longer possible to overload other cards by connecting them to the High Current Relay Card.

However in this case each channel on this card can only be connected to every other channel on this card, but not to any signal on any other card.

Contrary to the Standard Relay Card this card can only be connected to the interconnection lines IL1, IL2, IL4 and IL5, but not IL3 and IL6.

If a DIAG card is available, the fuses are checked while initialization.

6.6.4 Pin Configuration



6.6.5 Relays, Switches and Jumpers on the PCB

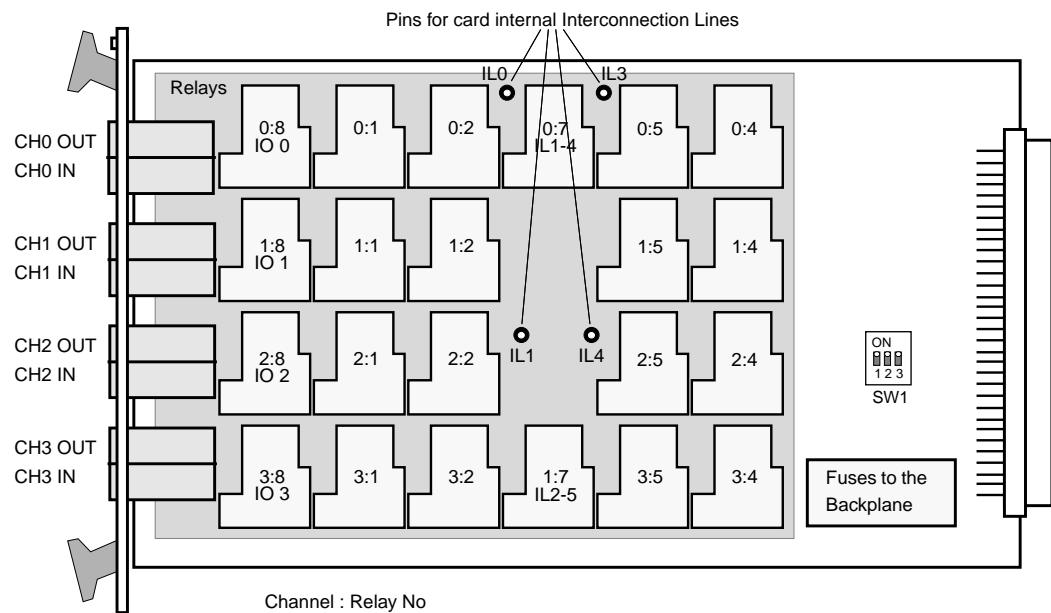


Figure 6.9: HCRC: Board Layout

The numbers on the relays show the channel and the relay number of the relay. This is needed for self testing purposes with the DIAG-Card. Some relays also show their function. IO 0 means that this relay is responsible for connecting the input of Channel 0 with the output of Channel 0. IL1-4 means that this relay is responsible for connecting IL1 and IL4 with each other.

6.6.6 Initial State



Contrary to the Standard Relay Card, during the switched off condition the signal inputs and the signal outputs are not connected on the High Current Relay Card. There is no connection between any signal and any interconnection line.

Immediately after the power-on or reset (RST or reset by software) all signal inputs are connected with the associated outputs. The signals are not connected with any interconnection line. This condition remains stable until it gets changed by the user.



When connecting several high current signals there is the danger of destroying the Controller Card by overloading it. Therefore, connections between the interconnection lines on the Controller Card must be disconnected before connections on the High Current Relay Card are realized.

As a basic principle, because of higher acceptable current load it is preferred to connect the interconnection lines IL1 and IL4, IL2 and IL5 on the High Current Relay Card, but not on the Controller Card.

However, this only works if micro-fuses are not removed.



The High Current Relay Card could heat up to temperatures greater than 60° Celsius during high current operations.

To avoid burns or other injury after running high current, allow the card to cool down for at least 10 minutes before removal.

6.6.7 Technical Data - High Current Relay Card (HCRC)

Technical Data	
Maximum Voltage:	AC/DC < 50V This means voltage between different signals as well as voltage between any signal and the case of the FailSafeTester
Maximum Load: (High Current Section)	DC: <28V: 30A (Resistive) <50V: 15A (Resistive) AC: <50V: 30 A (Resistive)
Maximum Load: Low Current Section	The Low Current Section (Connection to other Cards) is fused by 10A, also see maximum load of the card to which this one is to be connected
Make current:	100A (max 4 s at duty cycle 10%)
Channels:	4
Operate Time:	15 ms
Release Time:	10 ms
Electrical Endurance:	>10 ⁵ operations at 30 A DC resistive Load
Contact Resistance (each relay contact)	New condition: < 0.1 Ω With conditions that are unfavorable (for example sulfurous air and a long time of inactivity) contact resistance will increase up to 1 Ω . Contacts will regenerate when continuously switched.
Maximum Length of Connected Wires	<3 m, for EMV reasons This means Supply Voltage Connectors as well as Signal Connectors and the Serial- / CAN-Connector
Size (BxHxT)	290 mm x 145 mm x 20 mm (8 U, requires 2 Slots)
Connectors	4x Molex Minifit Sr. 2pol. Molex Art-No: 32A Crimp Contacts: 42815-0011 50A Crimp Contacts: 42815-0031 Case: 42816-0212
Current Consumption:	5V: 50mA 12V: 500mA