# MRL TC100 Trip circuit supervision

The MRL TC100 relay is used to monitor and report the situation of circuit breaker trip circuit and also the operation of circuit breaker.

This is done by using two inputs of relay, one connected in parallel with trip contact (pins 3 , 4), and the other , connected in parallel with breaker aux. contacts 52a & 52b, as shown in the following figure.
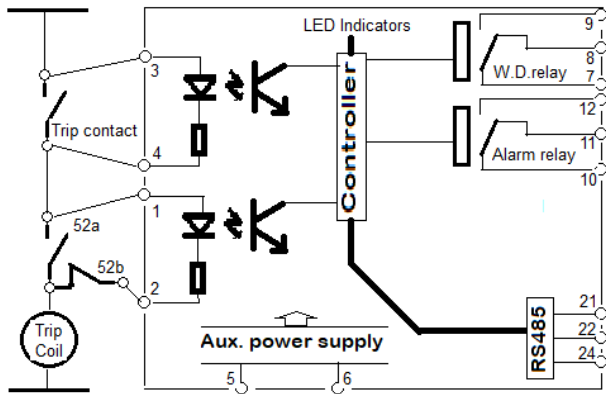
The DC supply of the trip coil is also supervised, to ensure you that the breaker is connected to a supply with a suitable value. If it is not in the suitable range, it is detected as the trip circuit fail. This option can be disabled or enabled by user.

For this purpose, the TCS relay should be supplied from a similar source as breaker.
If the supply voltage is out of bellow defined range, the TCS relay will give this alarm:
    "DC supply low" or "DC supply high"

DC supply low: Going to alarm state: 69+/-1 V
Return back to safe state: 75+/-1 V

DC supply high: Going to alarm state: 147+/-1 V
Return back to safe state: 141+/-1 V

Specifications

- Event recording with time tag & detailed information of trip steps (Up to 200 events)122
- 1 ms time tag accuracy for events
- PC software, via USB or based on Modbus protocol via RS485 for settings & events
- Ability to synchronize relays with station server time, via RS485
- Breaker "DC power out of range" detection and alarm
- Two delay steps d1 & d2
    d1: 10 to 1000 ms definable on relay by setting (uncritical as time out)
    d2: d1 to 5000 mSec definable on relay by setting(critical delay as CB failure)
- Breaker "DC power out of range" detection and alarm

Inputs

2 digital inputs considered for
        trip contact & C.B. position (52a N.O.)

    Nominal voltage: 110 Vdc
    Voltage range: 20 – 150 Vdc

Aux. power supply
    Nominal: 110Vdc Range: 60 – 180Vdc
    Power consumption: Max 2W

Output contacts

- 2 relay contacts fixed for TCS alarm & power safe

- 2 optional contacts for user request i.e. for C.B. open & close

Contact specification:
    12A 250Vac
    12A 30Vdc/ 0.3A 125Vdc/0.4A 110Vdc

Settings

- Time & date, Christian or Solar (Get data only from PC if selected)
- Delay time for perfect operation (d1)
- Max allowable delay time for circuit breaker operation (d2)
- Modbus address & name
- Baud rate

There is an additional changeover contact for whatchdog, which changes its state during DC power missing.

It is strictly recommended to use the whatchdog contact to detect the relay DC power interruptions.