KILOWATT LABS
BETTER ENERGY

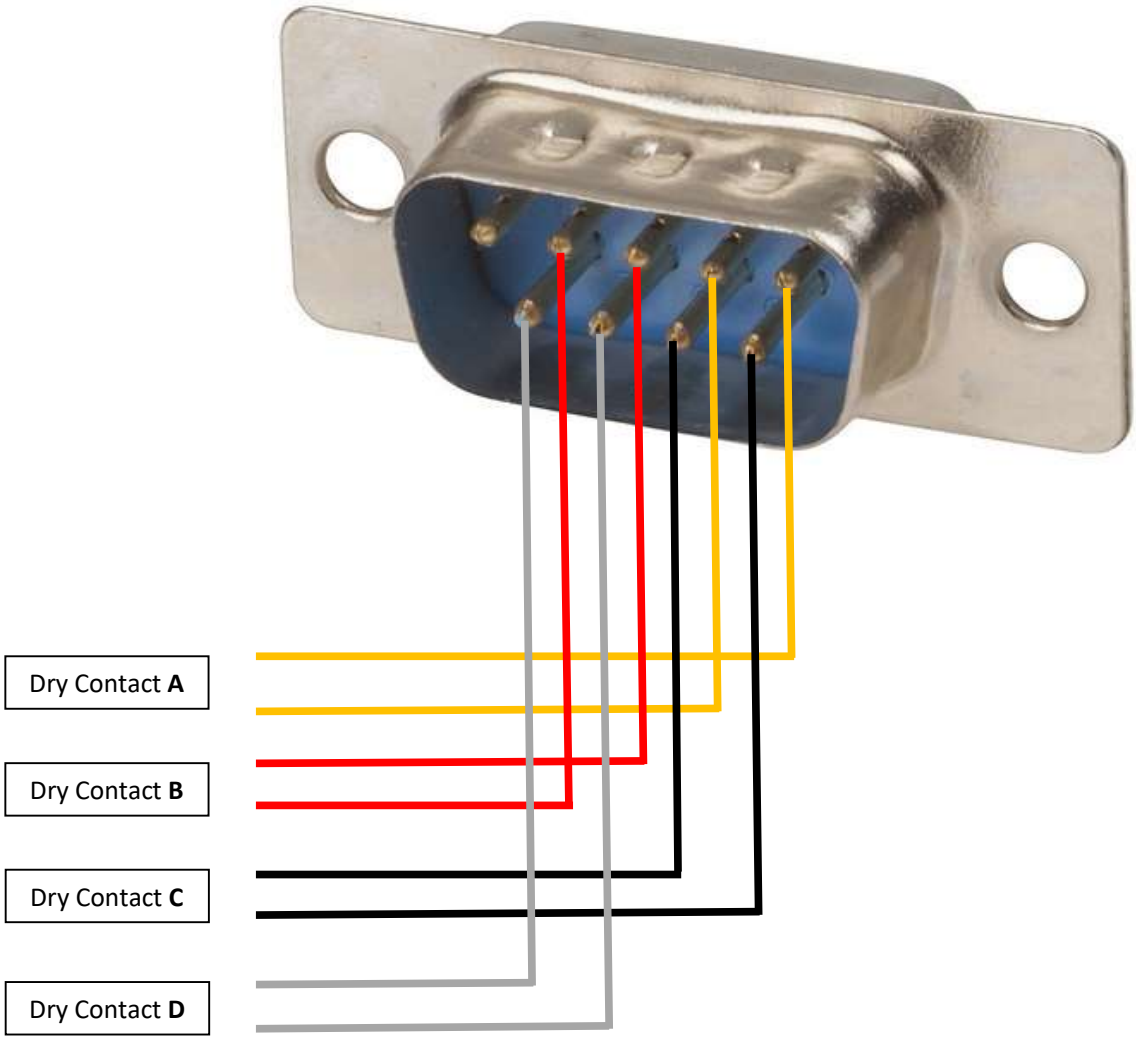
Dry Contact Operations for Sirius Capacitor Module

December 2019

Legal provisions:

Note:

Dry Contact – The isolated pins of a relay which usually labelled as Normally Open (NO), Normally Closed (NC), and Common (C). In this application, the module used Normally Open and Common pins which was labelled as Dry Contact. The module has 4 relays built-in labelled as Dry Contact A, B, C, and D with capacity of 10A each. These relays can be configured in Sirius Monitoring Software.



DB9 Pin Configuration

Dry Contact **A** – Pin 4 and Pin 5

Dry Contact **B** – Pin 2 and Pin 3

Dry Contact **C** – Pin 8 and Pin 9

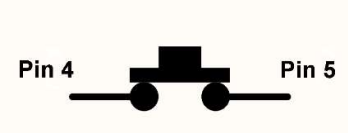
Dry Contact **D** – Pin 6 and Pin 7

Low Voltage Mode

The Dry Contact will short its respective pins when the Total Voltage drops lower than or equal to the Turn ON Value. It will open its respective pins if the Total Voltage is higher than the Turn OFF Value.

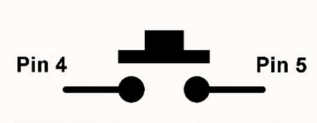
Example: Make Dry Contact **A** as Low Voltage Triggered.

If Total Voltage is equal or lower than the Turn **ON** Value (Total Voltage <= Turn ON Value)



Pin 4 and Pin 5 are SHORTED

If Total Voltage is greater than the Turn **OFF** Value (Total Voltage > Turn OFF Value)



Pin 4 and Pin 5 are OPEN

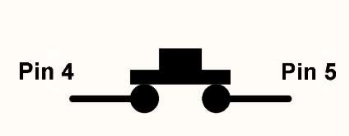
Turn OFF value is greater than Turn ON value because the Dry Contact should not function if the condition of Low Voltage is not met. Dry Contact is always shut OFF if the total voltage did not drop lower than the Turn ON value. This is to detect whether the module dropped or higher than the preferred voltage value. Put a little difference between Turn ON and Turn OFF value to accommodate the bounce back of voltage during charging and discharging.

High Voltage Mode

The Dry Contact will short its respective pins when the Total Voltage higher than or equal to the Turn ON Value. It will open its respective pins if the Total Voltage is lower than the Turn OFF Value.

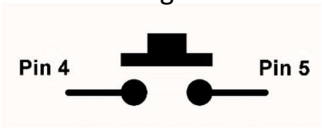
Example: Make Dry Contact **A** as High Voltage Triggered.

If Total Voltage is equal or greater than the Turn **ON** Value (Total Voltage >= Turn ON Value)



Pin 4 and Pin 5 are SHORTED

If Total Voltage is lower than the Turn **OFF** Value (Total Voltage < Turn OFF Value)



Pin 4 and Pin 5 are OPEN

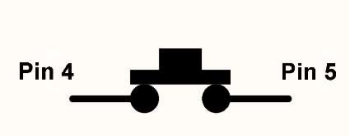
Turn ON value is always greater than Turn OFF value because dry contact is always OFF unless total voltage reaches the predefined value set on Turn ON value, this means that the total voltage reaches a high voltage. Turn OFF value is lower because dry contact should shut off if the total voltage is lower than this value which means the module is not in high voltage anymore. Put a little difference between Turn ON and Turn OFF value to accommodate the bounce back of voltage during charging and discharging.

State of Charge (SOC) Mode

If the module has equal or higher SOC than Turn ON value, dry contact pins will get shorted. If the module has lower SOC than Turn OFF value, dry contact pins will get OPEN.

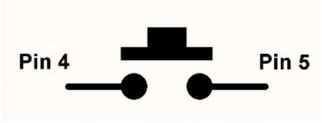
Example: Make Dry Contact **A** as SOC Triggered.

If State of Charge is equal or greater than the Turn **ON** Value (SOC >= Turn ON Value)



Pin 4 and Pin 5 are SHORTED

If State of Charge is lower than the Turn **OFF** Value (SOC < Turn OFF Value)



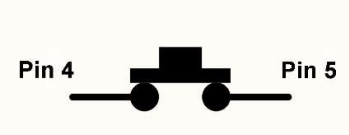
Pin 4 and Pin 5 are OPEN

High Current Mode

If the module current is equal or greater than the Turn ON value, the dry contact pins will get shorted. Where if the module current is less than the Turn OFF value then the dry contact pins will get OPEN. Note that the high current in dry contact is limited to a value of 250A unlike the high current detection of the module itself which can go up to 500A setting.

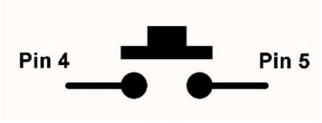
Example: Make Dry Contact **A** as High Current Triggered.

If Current draw is equal or greater than the Turn **ON** Value (Current >= Turn ON Value)



Pin 4 and Pin 5 are SHORTED

If Current draw is lower than the Turn **OFF** Value (Current < Turn OFF Value)



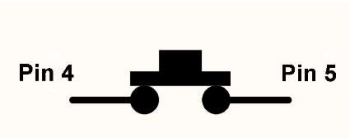
Pin 4 and Pin 5 are OPEN

High Cell Temperature Mode

If the module temperature, T on LCD display, is equal or greater than the Turn ON value the dry contact pins will get SHORTED. While if the module temperature dropped lesser than the Turn OFF value the dry contact pins will get OPEN.

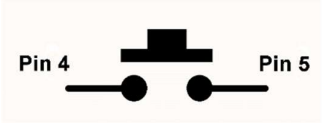
Example: Make Dry Contact **A** as High Cell Temperature Triggered.

If Module Temperature is equal or greater than the Turn **ON** Value (T >= Turn ON Value)



Pin 4 and Pin 5 are SHORTED

If Module Temperature is lower than the Turn **OFF** Value (T < Turn OFF Value)



Pin 4 and Pin 5 are OPEN

Module temperature is labeled **T** on the LCD which measures the temperature of the cells, where the module output terminal temperature is labeled as **X**.

Module Terminal Temperature

Terminal temperature means the output terminal F12, including cables and electronic switch (SSR), temperature labeled on LCD as **X**. Please read High Cell Temperature Mode.

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