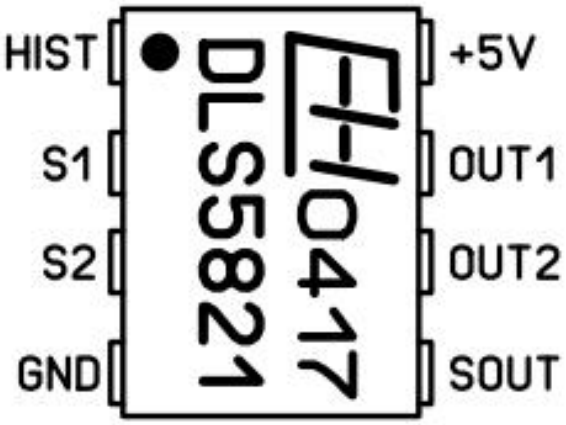
 Translation dl2mgi@online.de

DLS5821 (NEW VERSION)



The DLS5821 is a digital equivalent of an analogue circuit LM1830N from NATIONAL SEMICONDUCTOR.

The structure contains all the necessary blocks that perform the function of a digital liquid-conducting sensor such as water, damp material such as earth for flowers. It can work in option without hysteresis (two electrodes) or with hysteresis (three electrodes). No liquid-water or damp detection (active low) is signaled after 15 seconds at OUT1 output of the system. Can be used to signal lack of liquid or to block heaters. Second OUT2 - active low status - controls the external liquid-water dispensing system (valve or relay).

WARNING ! Maximum output current OUT1 and OUT2 <20mA.

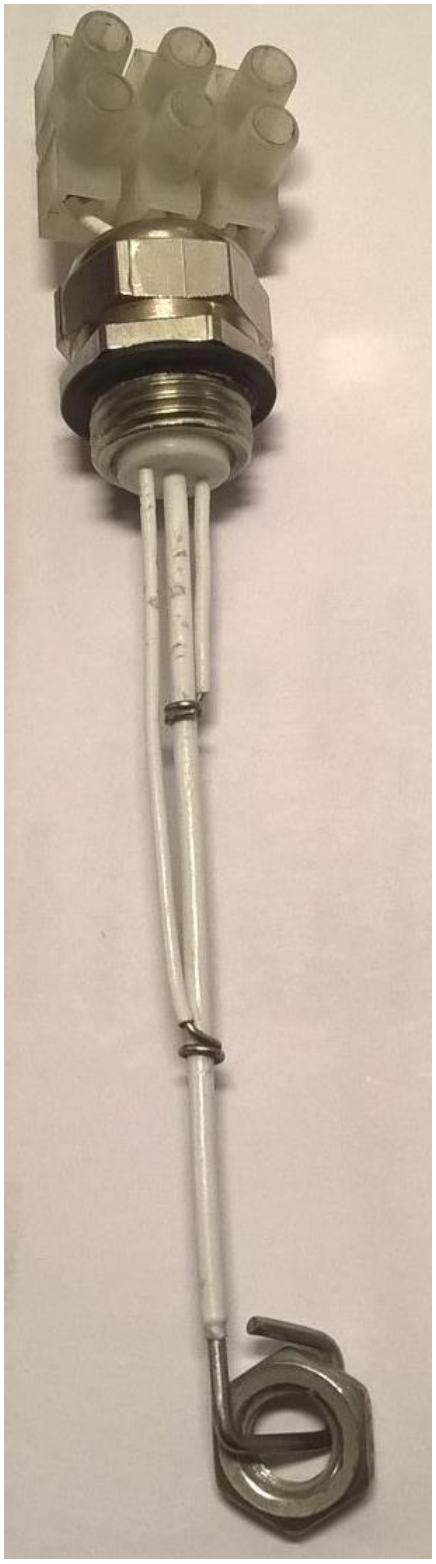
Variable polarization prevents electrolysis of the probe electrodes. The sensitivity of the detectors depends on the liquid and the distance from the transmitter electrode to two resistors. One for each detector. Sample values in the figure below. Description of the system outputs:

1.HIST-- pin to VCC = without hysteresis mode, Pin to = GND mode with hysteresis.
2.S1 -- Input of the first detector (long electrode).
3.S2 -- Input of second detector (short electrode).
4.GND.
5.SOUT -- Generator output to transmit probe (frequency approx. 1kHz).
6.OUT2 -- Water valve or relay control output.
7.OUT1 -- Control output signaling the lack of liquid-water or the blockade of heaters.
8.VCC -- Power supply + 5V

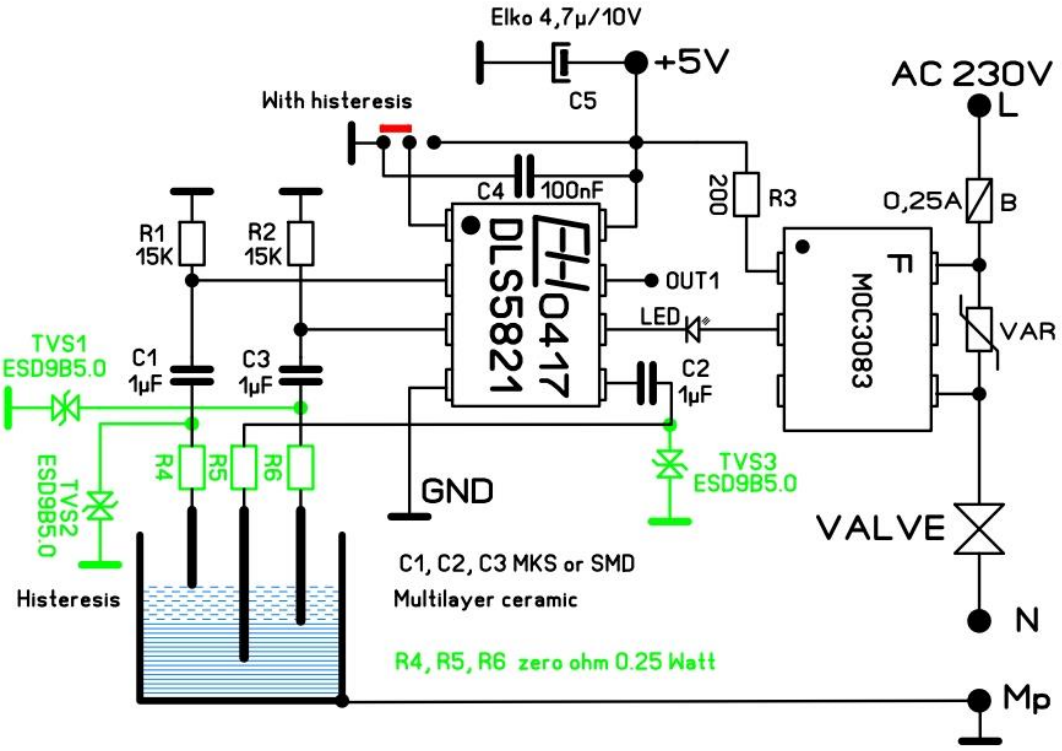
This system is used in new developments of convection ovens in steam generators.

It can be used to control water with a stable mirror or to boil water with a turbulent mirror. It can also be used wherever there is a need to maintain a constant level of liquid-water (hot water boilers, steam generators, dental washers and many others.) In systems that maintain constant soil moisture (flowers and vegetables).

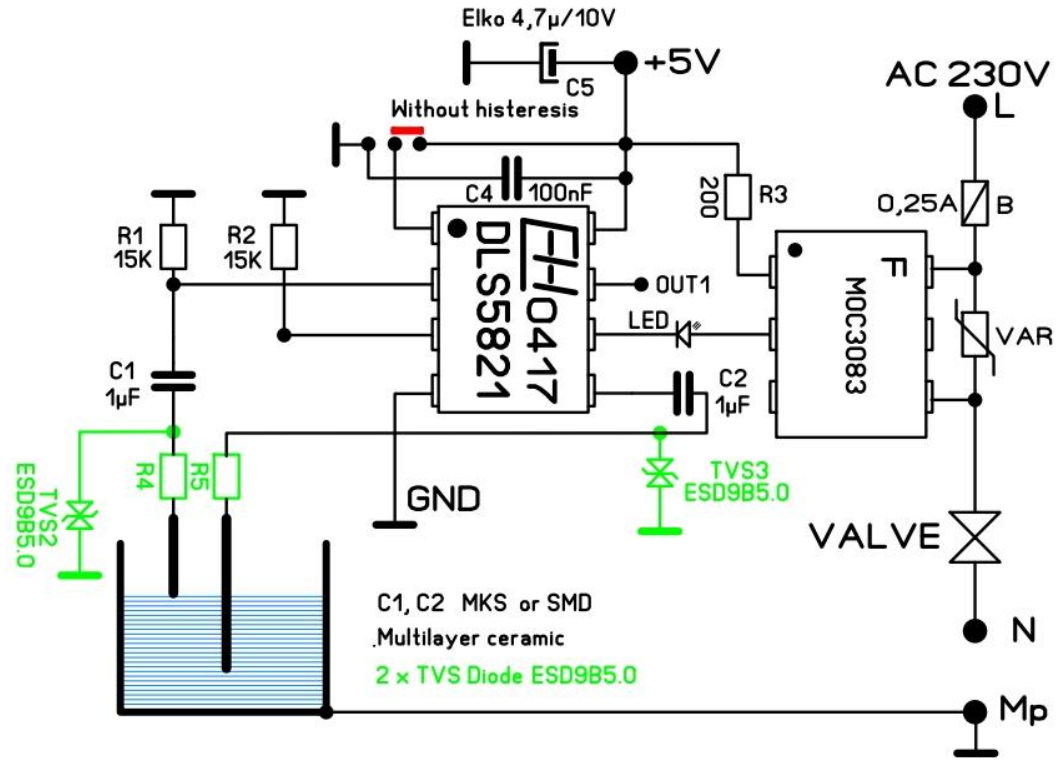
WARNING ! Does not work: with oils, distilled water, pure alcohol and dry loose materials.



EXAMPLE WITH HISTERESIS



EXAMPLE WITHOUT HISTERESIS



When operating water tanks with radiators, use safety devices marked in green. Factory default switching thresholds for detectors are set for electrodes up to about 8 cm. If you need a different sensitivity then you should set it like this:
In order to properly start the system, first set the sensitivity of the first detector S1:

1-step - Set the system to without hysteresis mode.
2-step - Connect the OUT2 LED to the serial resistor to limit the current
To about 10mA (about 380m) and connect with + 5V.
3-step - In place of resistor R1 we plug PR 47k.
4-step - Power on and cyclically dipping and raising the electrodes at the same time
We set the threshold for lighting and the LED is off. We measure the resistances of the PR and we stick two identical resistors with measured values in place of R1 and R2 are in the system.
5-step - Then switch the system to hysteresis mode. We connect the OUT1 to the LED
LED in the same way as in OUT2.
The switching threshold depends on the size and distance of the electrodes.

After correctly setting the threshold of detector 1 and selling the resistor with the same resistance to Input of detector 2, the circuit should work as follows:

1. All electrodes not immersed OUT2 LED lit (opens the water valve).
2. After approximately 15 seconds, the LED on the OUT1 (heater block)
3. All electrodes submerged (tank filled) LEDs are off. Heaters unlocked, water valve closed.
4. Then simulate the evaporation of water slowly raising the water sensor with three electrodes so that the S1 electrode is above the water surface.
   During this time, the system still doesn`t open the valve and does not block the heaters until the water level drops below the S2 probe (evaporation).
   When the level falls below S2, it immediately opens the water valve to fill the tank.
   Filling is done until S1 level is reached.
   If the tank is not filled in for 15 seconds (the amount of water for the hysteresis), the system will activate the heater block to prevent further boiling and evaporation. The water valve will remain open all the time.
   This state will continue until the tank is completed. After completion, the system will return to the normal duty cycle.
   (Case of too low pressure or lack of water supply).
   This protects the heater from damage.

C-MOS layout, so be careful when experimenting.
Links in the topic Liquidsensor:
http://www.ebay.de/itm/LM1830N-Integrated-Circuit-Case-DIP14-Make-National-Semiconductor-/162013929309?hash=item25b8c85f5d:g:eTsAAOSwHxVW8A9Q
http://ep.com.pl/files/4201.pdf

Best regards
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