

APPLICATION NOTES

SCHMITT TRIGGER

The Schmitt Trigger is a valuable control circuit that provides snap action control in which trip point and differential (hysteresis) are both adjustable independently of the relay characteristics.

Because of the trigger type switching, output transistor power dissipation is quite low even when considerable relay current is drawn.

- 1^I: Relay pulls in when cell is darkened
- 1^{II}: Relay pulls in when cell is illuminated
- 1^{III}: Both (or all) cells must be illuminated for relay to drop out ('AND' circuit)
- 1^{IV}: Either (or any one) cell when illuminated will cause relay to drop out ('OR' circuit)
- R₁ sets operating point
- R₃ sets differential

The controls interact and adjustments should be alternated till both operating point and differential are within required limits.

PHOTO-ELECTRIC SERVO

A simple but accurate relay-servo for aperture or illumination control.

Circuit drives cell resistance (illumination) to a value preset by R₂. R₁₀ controls dead-band.

When level is correct, all four transistors are cut off. Power drain is limited to two relatively high resistance dividers permitting economical operation with dry cells.

LOW LEVEL VOLTMETER (PHOTO CHOPPER)

Low level DC is converted to AC, amplified, synchronously rectified, and compared to the input for high accuracy independent of loop components other than the feedback resistor R₂ and R₃ and the reading meter.

For non-inverting amplifier, Ne₁ illuminates PC₁ and PC₃; Ne₂ illuminates PC₂ and PC₄.

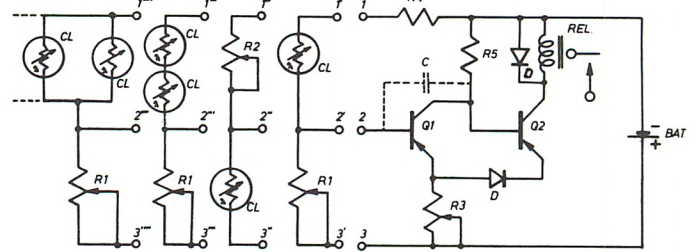
For inverting amplifier, Ne₁ illuminates PC₁ and PC₄; Ne₂ illuminates PC₂ and PC₃.

VERSATILE PHOTOMETER CIRCUIT

This amplified bridge-type circuit is adaptable to measurements over an extremely wide range of cell resistance (light levels), to narrow range comparison measurements (color balance) and to intensity ratio measurements (contrast).

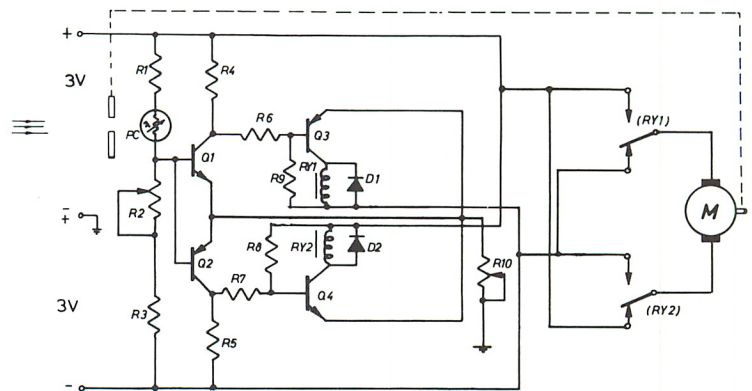
With the component values suggested, and using a CL705HL, light levels of less than .01 ft c may be measured or compared.

SCHMITT TRIGGER



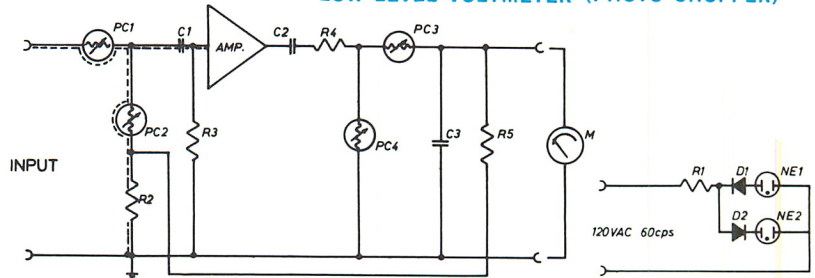
- R1: 1KΩ
- R2: 50KΩ
- R3: 25Ω
- R4: 470Ω
- R5: 6.8KΩ
- CL: 703L
- C: .005μF
- D: 1N91
- Q1, Q2: 2N1303
- REL: 500Ω, 9V DC
- BAT: 12V

PHOTO-ELECTRIC SERVO

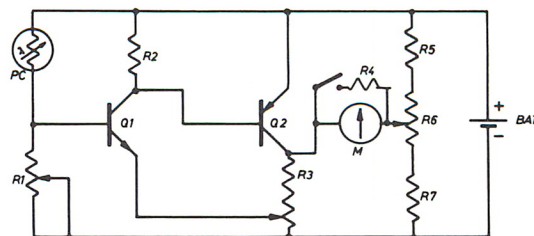


- R1: 1KΩ
- R2: 10KΩ
- R3: 470Ω
- R4: 680Ω
- R5: 680Ω
- R6: 270Ω
- R7: 270Ω
- R8: 1.2KΩ
- R9: 1.2KΩ
- R10: 10Ω
- D1, D2: 1N 536
- RY1, RY2: 100Ω DC, 2V
- Q1, Q4: 2N 1304
- Q2, Q3: 2N 1305
- PC: CLAIREX PHOTOCELL TYPE CL 705HL

LOW LEVEL VOLTMETER (PHOTO CHOPPER)



VERSATILE PHOTOMETER CIRCUIT



- R1: 1MEG
- R2: 1MEG
- R3: 5KΩ
- R4: 470Ω
- R5: 1KΩ
- R6: 10KΩ
- R7: 1KΩ
- M: METER 100-0-100μA F.S.
- Q1: 2N1304
- Q2: 2N1305
- BAT: 6V
- PC: CLAIREX PHOTOCELL TYPE CL 705HL



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