

## TECHNICAL INFORMATION

Open Collector

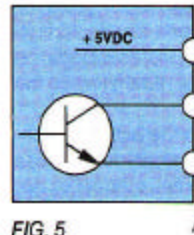


FIG. 5

Diode Protected Open Collector

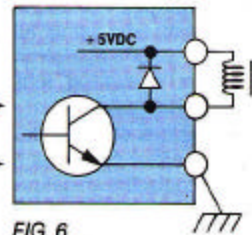


FIG. 6

External Protective Diode Open Collector

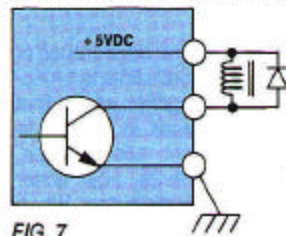


FIG. 7

External DC Power Source Open Collector

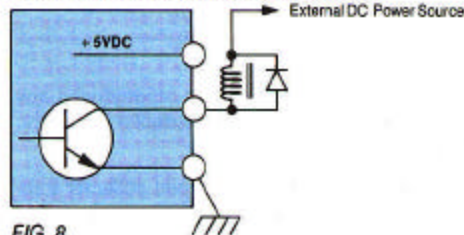


FIG. 8

SPDT Relay

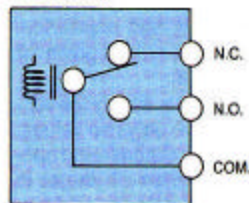


FIG. 9

DPDT Relay

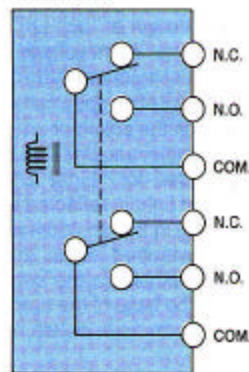


FIG. 10

OFF, the voltage on the collector will be equal to the supply voltage. Therefore, the OFF state of an open collector output will be HIGH voltage.

Continuing with our "Light Energize" example, assume that a target moves into position and reflects light back to the photodetector of the skanner. Current flows in the photodetector circuit and develops several volts across the sensitivity pot. This is above the amplifier's threshold, so the amplifier turns ON and drives current into the base of the output transistor. The output transistor turns ON, acts as a closed switch, and conducts current. The voltage at the collector will be a LOW value — a few tenths of a volt developed across the transistor. The rest of the supply voltage is dropped across the "pull up" resistor or load resistance. The ON state of an open collector or transistor output, then, will be a LOW voltage.

If the open collector output is connected to an inductive load resistance such as a relay coil or solenoid, a shunt diode should be used to protect the output transistor against inductive surges. Some Skan-A-Matic controls can be ordered with the diode built-in for convenience. This precaution is not necessary when driving resistive loads such as logic circuits and other transistors. Refer to Fig. 6, 7 and 8.

### Features

- Small, long-life solid-state devices
- Change state very rapidly — switch without radiating large amounts of electrical noise
- Very flexible — interface directly with relays and solenoids, microcomputers and programmable controllers
- Can easily form logic elements like AND gates and OR gates

### Limitations

- Can only control DC power at relatively low voltages and currents
- Personnel are often unfamiliar with this device
- No isolation between amplifier and load circuit

**Relay** A relay is an electrically-controlled switch. When electric current is applied to a coil of wire the coil is energized, i.e. it develops a magnetic field which attracts a metal armature. The armature moves one or more electrical contacts to perform the switching action. The armature is returned to its original position by a spring when the coil is de-energized. The small current provided by the amplifier when it turns ON, energizes the coil and can then control much higher levels of power, either AC or DC.

Relays used by Skan-A-Matic will be listed as SPDT (Single Pole Double Throw) or DPDT (Double Pole Double Throw). The number of "Poles" is the number of moving contacts; "Throw" refers to the number of stationary contacts for each moving contact. SPST, for example, would be a single moving contact and a single stationary contact;