Five-state LED display monitors paging system

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This paging station circuit uses a single red- or green-light-emitting diode to alert the user to any of five distinct paging conditions. It is a simple, extremely easy-to-build monitor designed to be part of a large paging system. Two relays and a 555 timer send a signal to the LED (a Monsanto MV5491 or Xciton XC5491) to produce the following signals:

■ Off (no power) indicates that paging has been cut off to that station or the region in which it is located.

■ Steady green signifies that the station is operational, but is not being paged.

■ Steady red is the individual station's paging signal.

■ Flashing green tells the user that all stations in the system are being alerted.

■ Flashing red signals an emergency situation to all monitoring stations.

An external signal triggering relay A controls the color of the LED, changing it from its green (idle) condition to red. Relay B is excited when all stations are to be called. This second relay puts the 555 timer in the astable mode, changing the LED's usual dc state to an on-off oscillation of about 7.5 hertz at a duty cycle of 50%. The frequency of oscillation can be adjusted by suitably selecting R_1 and C_1. In the emergency red flashing mode, both relays must be tripped by external signals.

This circuit can readily be adapted to signal a single panel-mounted lamp. To derive the five operating modes, the relay contacts must be replaced by the contacts on a suitably wired rotary switch.

Supply voltage for the 555 may vary from 9 to 15 volts; with a 12-v supply, current drain is about 40 milliamperes. □

OPERATING MODES FOR 5-STATE MONITOR			
Condition	Typical application	Relays operated	Lamp display
1	power off	none	off
2	power on, circuit idle	none	steady green
3	paging	"A" only	steady red
4	all zone paging	"B" only	flashing green
5	emergency announcement	A and B	flashing red

Multimode monitor. Module indicates the state of a multizone paging system using red/green LED, 555 timer, and relay contacts. When pager is off, both LEDs are extinguished. When pager is idle, green LED turns full on. If monitor is paged, red LED turns full on. During all-zone paging and emergency announcements, relays are energized for timer so that red or green LED flashes.