



G00002

20

ABSTRACT

162162

**APPARATUS FOR RELAY BASED MULTIPLE POINT PROCESS FREQUENCY
RESPONSE ESTIMATION AND CONTROL TUNING**

- 1 Briefly, a preferred embodiment of the present invention includes an apparatus for
2 tuning a regulator in a process controller. The digitized output from a standard relay and a
3 parasitic relay are fed through digital to analog converter providing signals at $.5\omega_c$, ω_c and
4 $1.5\omega_c$ to the process, where ω_c is the process critical frequency. The apparatus records the
5 digitized relay output u' and the digitized process output y' until stationary oscillations are
6 reached. The outputs u' and y' are then used to calculate the process frequency response at
7 $.5\omega_c$, ω_c and $1.5\omega_c$. This data is then used to design the regulator, the output of which is
8 converted to analog form and inputted to control the process.

Figure 2 is to be published.