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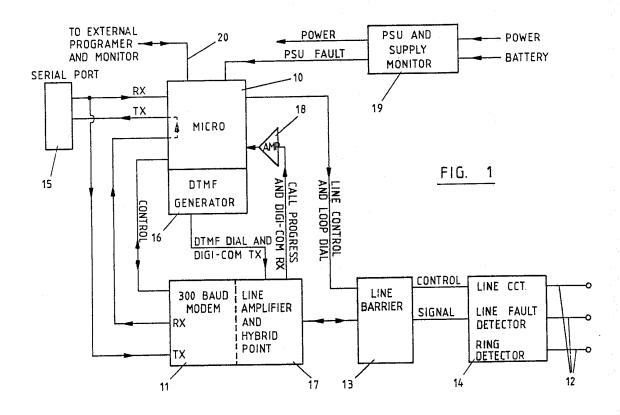
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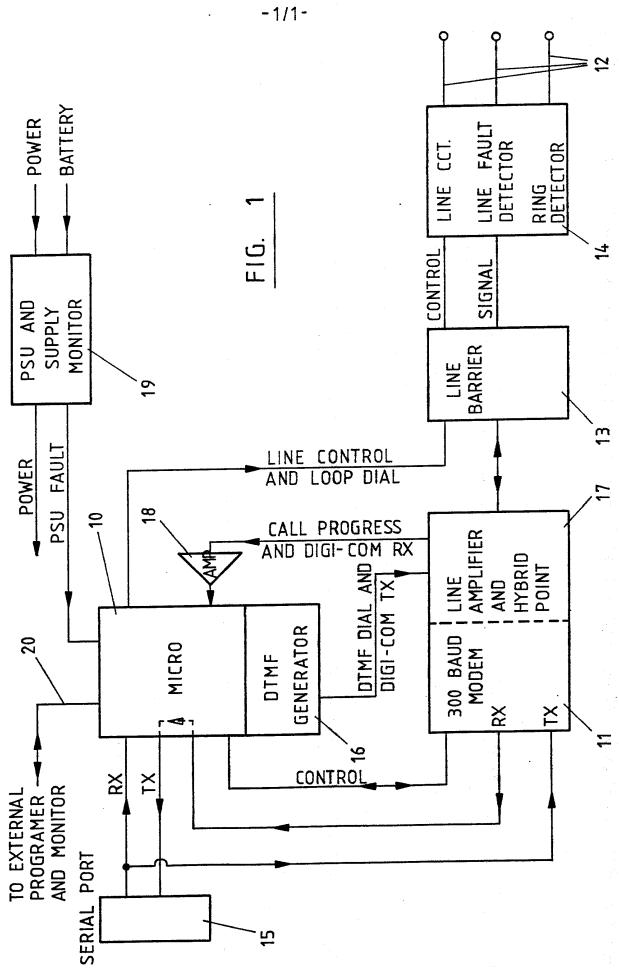
## (54) Alarm communication controller

(57) A communication system for an alarm system is arranged to respond to an alarm signal to automatically alert a supervisory station over the telephone network 12 and then transmit a report signal using coded audio tones, eg DTMF. A modem 11 inside the communication system enables another station to communicate with the alarm system over the telephone network 12 for example to test, interrogate or alter the operating parameters of the alarm system.



At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

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## Alarm Communication Controller

The present invention relates to a communication controller for alarm systems, particularly intruder and fire alarm systems.

In accordance with this invention there is provided a communication controller for an alarm system, which is arranged to respond to an alarm signal to automatically call a supervisory station over the public service telephone network and then transmit a report signal, the controller further comprising a modulator-demodulator so that it can pass digital data between the alarm system and another station over the telephone network.

In response to an alarm signal from the alarm system, the communication controller may dial the supervisory station by loop-disconnect and/or by transmitting coded audio dialing tones, e.g. DTMF (dual tone multifrequency) tones. Preferably the report signal which is then transmitted comprises coded audio tones, e.g. DTMF.

The modulator-demodulator of the communication controller enables for example a service station to communicate with the alarm system over the telephone network, for example to test the alarm system, to alter its operating parameters or to interrogate it. The communication controller may also enable the service station to be called automatically, e.g. on a periodic basis, for digital data to be transmitted to the service station over the telephone network: this digital data may comprise a status report in respect of the alarm system. The digital data is preferably transmitted in frequency shift key (FSK) form.

An embodiment of this invention will now be described by way of example only and with reference to the accompanying drawings, the single figure of which is a schematic block diagram of communication controller in accordance with the invention.

Referring to the drawing, there is shown a communication controller for an intruder alarm or fire alarm system.

The controller comprises a microprocessor 10 connected to a modem 11. The modem 11 connects to the public telephone network (PSTN) 12, via a line barrier 13 and a line control circuit 14. The microprocessor 10 and modem 11 receive information from the alarm system through a port 15. The microprocessor 10 transmits information received over the telephone network 12 out through the port 15 to the alarm system.

The microprocessor 10 monitors digital signals arriving from the alarm, which signals may request the microprocessor to dial a preset telephone number to allow signals from the alarm to be passed over the telephone network 12 to another party e.g. a service engineer. The microprocessor 10 will dial using loop disconnect pulses, DTMF (dual tone The signals sent multifrequency) or a combination of the two. must lie in the frequency range of the telephone network 12, so the external digital signal is converted by the modem 11 to FSK (frequency shift key) and sent down the telephone network 12 at The service engineer may return 300 bits per second. information in the same manner to the modem 11, which passes the information on to the microprocessor 10. The microprocessor decides whether it has to take action before passing on the In similar manner the information to the external alarm. service engineer may telephone in and then transmit information to the modem 11, e.g. to test the alarm system or to interrogate it.

In the event of an alarm signal being given by the alarm system, this will be received by the microprocessor 10, which will automatically dial another preset telephone number e.g. the police or other supervisory station. The microprocessor 10 will identify itself and relay its alarm signal using DTMF tones generated by 16 over the telephone

network 12. These tones (known as digi-com) join the transmission path at the line amplifier and hybrid point 17. Once this signal is sent an acknowledgment is sent back from the supervisory station, amplified by 18 and passed to the microprocessor 10.

In the event of a failure in the power supply 19, a battery back-up will take over and the microprocessor will alert the service engineer via the modem 11, as described previously. If a line fault occurs then this will be detected by circuit 14, which will alert the microprocessor 10 not to make any calls.

Some operators of the micoprocessor 10 can be programmed or reprogrammed by connecting an external programmer and monitor to line 20. For example the telephone numbers of the third parties automatically dialled by the system can be changed in this manner.

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## CLAIMS

A communication controller for an alarm system, which
is arranged to respond to an alarm signal to automatically call
a first station over the public service telephone network and
then transmit a report signal, the controller further
comprising a modulator - demodulator so that it can pass
digital data between the alarm system and a second station over
the telephone network.

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- A communication controller as claimed in claim 1, in
   which the report signal comprises coded audio tones.
  - 3. A communication controller as claimed in claim 1 or 2, in which said second station is called automatically.
- . 15 4. A communication controller as claimed in claim 3 in which said second station is telephoned on a periodic basis.
  - 5. A communication controller as claimed in claim 3 or 4 in which said second station is telephoned so that a status report of the alarm system may be transmitted.
    - 6. A communication controller as claimed in any preceding claim in which the digital data is passed over the telephone network in frequency shift key (FSK) form.
  - 7. A communication controller as claimed in any preceding
     claim comprising a microprocessor.
  - 8. A communication controller as claimed in claim 7 in 30 which the microprocessor receives an acknowledgement from the first station of a signal received by it.
    - A communication controller as claimed in claim 7 in which the operations of the microprocessor can be programmed or reprogrammed externally.
      - 10. A communication controller as claimed in any preceding

claim comprising a detector to detect faults on the public service telephone network.

- 11. A communication controller as claimed in claim 10
  5 appended to claim 7 in which the controller is inhibited from making telephone calls by the microprocessor in the event of a line fault.
- 12. A communication controller as claimed in any preceding claim comprising a battery back up.
  - 13. A communication controller as claimed in claim 12 appended to claim 7 in which the microprocessor is arranged to call the second station in the event of a power failure.
- 14. A communication controller substantially as herein described with reference to the accompanying drawing.