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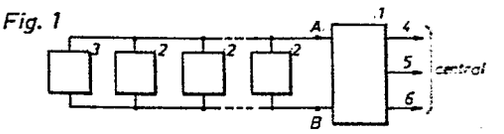
(54) A method and an apparatus for identifying a detector giving an alarm in a loop circuit having a predetermined number of detectors connected in parallel.

(57) The invention relates to a method and an apparatus for identifying a detector giving an alarm, said detector being one of a predetermined number of detectors (2) connected in parallel in a loop circuit connected to a line unit (1). The line unit (1) supplies the loop circuit with a first signal and the detectors (2) in an alarm state are adapted to give a predetermined voltage drop across the loop circuit in response to the first signal. This voltage drop in turn gives rise to an alarm signal from the line unit (1). In accordance with the invention, the line unit (1) is adapted to supply the loop circuit with a second signal in response to this voltage drop, and in response to this second signal the detector in an alarm state is adapted to emit a preprogrammed identifying signal to the line unit (1) for identifying said detector. The identifying signal can also include priority information.

Fig. 1



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A METHOD AND AN APPARATUS FOR IDENTIFYING A DETECTOR GIVING AN ALARM IN A LOOP CIRCUIT HAVING A PREDETERMINED NUMBER OF DETECTORS CONNECTED IN PARALLEL

TECHNICAL FIELD

The present invention relates to a method of identifying a detector giving an alarm, said detector being one of a predetermined number of detectors connected in parallel in a loop circuit connected to a line unit, which supplies the loop circuit with a first signal, said detectors in their alarm state giving a predetermined voltage drop across the loop circuit in response to the first signal, said voltage drop giving rise to an alarm signal from the line unit, the invention also relating to an apparatus for carrying out the method.

BACKGROUND ART

In fire detector systems, for example, it is essential that when there is an alarm, information is quickly received as to what detector the alarm comes from. It is known in the art to provide each detector with an identifying component which changes the loop circuit impedance in a manner characteristic to the detector when it gives an alarm, so that the particular detector can be identified. The identifying information is not obtained directly from the respective detector, however, which is a disadvantage, since alterations in the self-impedance of the loop circuit can give rise to false alarms or to the wrong detector being identified. Furthermore, this solution gives no possibility of differentiating priorities between different alarm states, which is a further disadvantage.

DISCLOSURE OF INVENTION

The object of the present invention is to provide a method and an apparatus enabling the reception of both identity and priority information from a detector giving an alarm.

This object is obtained by the method and apparatus in accordance with the invention being given the characterizing features disclosed in the claims.

BRIEF DESCRIPTION OF DRAWING

The invention will now be described in detail below with reference to the accompanying drawing, on which Figure 1 illustrates an embodiment of a loop circuit connected to a line unit and having a plurality of detectors connected in parallel, said loop circuit being terminated by an end circuit, Figure 2 illustrates an embodiment of a detector connected into the loop circuit of Figure 1, Figure 3 illustrates an embodiment of the line unit illustrated in Figure 1 and Figure 4 is a diagram of the voltage across the input of the line unit for both the alarm and normal state of the detector in Figure 2.

MODE FOR CARRYING OUT THE INVENTION

Figure 1 illustrates a line unit 1, to which there is connected a loop circuit having a plurality of detectors 2, e g fire detectors, connected in parallel. In parallel with the detectors 2 there is also connected to the loop circuit an end circuit 3, which may consist of a flipflop. In the non-alarm state or normal state of the loop circuit this flipflop provides an idling pulse train over the line circuit 1, and this pulse train will be described in detail in conjunction with Figure 4.

The line circuit 1 is also connected to a central unit (not shown) via lines 4, 5 and 6.

Figure 2 schematically illustrates an embodiment of a detector 2 in Figure 1. It should be pointed out in this connection that all the detectors illustrated in Figure 1 do not need to be constructed in the manner illustrated in Figure 2. The detector 2 of Figure 2 is of the type giving a predetermined voltage drop across the loop circuit when in an alarm state. In the alarm state, a contact 7 in the detector 2 closes, this contact being connected in series with a component 8, e g a Zener diode, giving said predetermined voltage drop across the loop circuit when the contact 7 is closed. This contact does not need to be mechanical, but can e g be a transistor or a thyristor. A resistor 9 is connected in series with the contact 7 and diode 8. This resistor 9 is connected between the base and emitter of a transistor 10, the emitter thereof being connected to one conductor of the loop circuit, while its collector is connected to the other

conductor of the loop circuit via a reference voltage generator 11. The generator 11 is in turn connected to a memory 12, which has been preprogrammed with detector identification information. The output of the memory 12 is connected to the base of a transistor 13, the collector-emitter path of which is connected between both conductors of the loop circuit.

An embodiment of the line unit 1 of Figure 1 is illustrated in Figure 3. In the line unit 1 the terminals A and B connected to the loop circuit are connected such that A is connected to the positive pole of a direct voltage source, and B is connected to the input of a voltage decoder 14 as well as to the output of a signal generator 15. The voltage decoder 14 is adapted to sense the voltage at the terminal B and in response thereto to cause the signal generator 15 to change the current fed to the loop circuit via terminal B. The decoder 14 is also connected to the unillustrated central unit for emitting alarm and identity signals to it.

The function of the apparatus illustrated in Figures 1-3 will now be described in conjunction with Figure 4, where the diagram illustrates the voltage U_B between the terminal B and the minus pole of the DC source in Figure 3.

At the start of the diagram, i e in the normal state, when none of the detectors 2 is in the alarm state, the impedance of the end circuit 3 changes and the signal generator 15 in the line unit 1 causes the voltage at the point B to form an idling pulse train 16. As long as no detector 2 is in the alarm state, this idling pulse train will continue to occur, and is accepted by the line unit 1 as the normal state.

When a detector 2 gives an alarm, by its contact 7 closing, the voltage will rise at the point B, and accordingly the idling pulse train will cease, e g at the time t1. The voltage decoder 14 in the line unit 1 is adapted to accept this voltage increase as an alarm state and emit an alarm signal to the central unit via the line 4. The signal generator 15 is also controlled by the voltage decoder 14 such as to increase the current in the loop circuit, the voltage across the resistor 9 then making the transistor 10 conductive. The reference voltage generator 11 thus obtains current for exciting the memory 12 to read out its preprogrammed identity signal for controlling the transistor 13. The identity signal from the

transistor 13, which can be a pulse train 17, is decoded with the aid of the voltage decoder 14 in the line unit 1, and the decoded identity signal is fed from the line unit 1 to the unillustrated central unit via the line 16 for presentation on a display.

Detectors in the same room, for example, may be programmed with the same identity signal to obtain an area alarm within a monitored section.

The identity signal can also contain priority information, which is also decoded with the aid of the voltage decoder 14 and sent to the unillustrated central unit via the line 5.

The pulse train from the memory 12 is intended to be fed to the voltage decoder 14 a predetermined number of times, so that identification is ensured.

What detector is giving an alarm and what priority the alarm has are thus easily determined in a simple manner with the aid of the apparatus in accordance with the invention.

CLAIMS

1 A method of identifying a detector giving an alarm, said detector being one of a predetermined number of detectors (2) connected in parallel in a loop circuit connected to a line unit (1), which supplies the loop circuit with a first signal, said detectors in their alarm state giving a predetermined voltage drop across the loop circuit in response to the first signal, said voltage drop giving rise to an alarm signal from the line unit (1), characterized in that the line unit (1) supplies the loop circuit with a second signal in response to the voltage drop, causing the detector giving the alarm to emit a preprogrammed identification signal to the line unit (1) for identifying said detector.

2 A method as claimed in claim 1, characterized in that the second signal is supplied to the loop circuit either before or after the line unit has emitted the alarm signal.

3 A method as claimed in claim 1 or 2, characterized in that the second signal causes the detector giving the alarm also to emit to the line unit (1) a preprogrammed priority information signal for causing the line unit (1) to emit alarm signals of different priority.

4 An apparatus for identifying a detector giving an alarm, said detector being one of a predetermined number of detectors (2) connected in parallel in a loop circuit, connected to a line unit (1), which is adapted for supplying the loop circuit with a first signal, said detectors (2) being adapted, when in an alarm state, to give a predetermined voltage drop across the loop circuit in response to the first signal, the line unit being adapted to emit an alarm signal in response to said voltage drop, characterized in that the line unit (1) is adapted to supply the loop circuit with a second signal in response to said voltage drop and that the detector giving the alarm is adapted to emit a preprogrammed identifying signal to the line unit in response to the second signal for identifying the detector giving the alarm.

5 An apparatus as claimed in claim 4, characterized in that the line unit (1) is adapted to emit the second signal either before or after the alarm signal is emitted.

6 An apparatus as claimed in claim 4 or 5, characterized in that the preprogrammed identifying signal includes priority information and that the line unit (1) is adapted to emit alarm signals of different priority in response to the priority information.

7 An apparatus as claimed in any of claims 4-6, characterized in that the identifying signal is the same for several detectors.

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Fig. 1

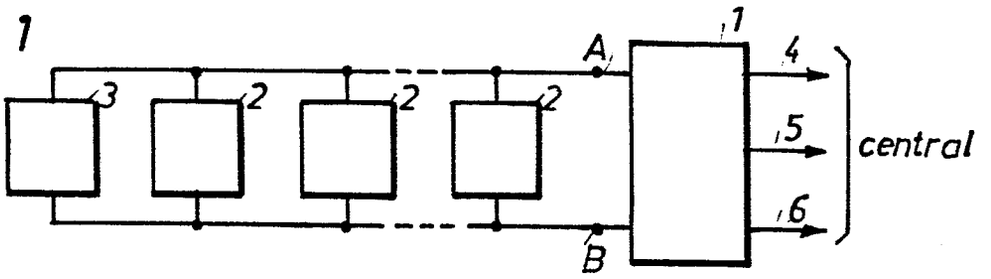

Fig. 2

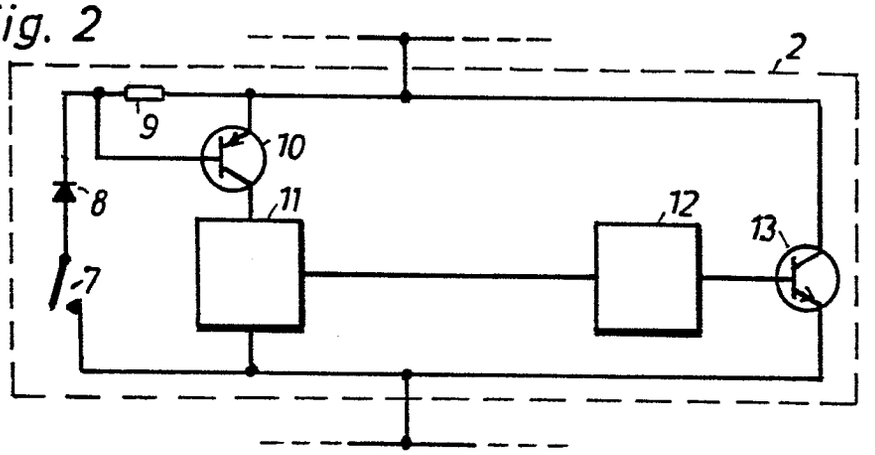

Fig. 3

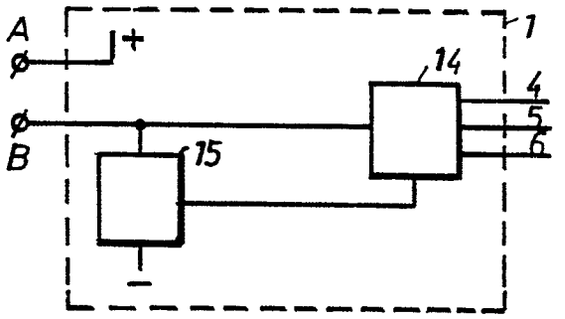

Fig. 4