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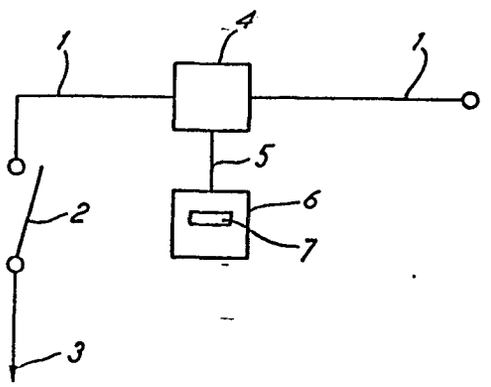
(54) Circuit breaker monitor.

(57) A monitor for a circuit breaker includes current monitoring means in the form of a peak detector for measuring the quantum of current which causes the circuit breaker to trip out and means for recording this measured quantum on a cumulative basis.



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CIRCUIT BREAKER MONITOR

THIS INVENTION relates to a monitor for breakers for electric circuits.

Electric circuit breakers generally have a specified maximum current loading which should not be exceeded before they are maintained. This loading is given by their manufacturers in terms of amperes in a particular time, and it is intended that this figure should be used as a guide for the user in determining when the circuit breaker requires maintenance.

However, there is no real known way for a user to establish what loading the circuit breaker has undergone at any particular time.

Although the number of trips of the circuit breaker may be known, this does not give an

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accurate reflection of the corresponding current that has loaded it.

It is an object of this invention to at least alleviate this difficulty.

In accordance with this invention there is provided a circuit breaker monitor comprising current measuring means adapted to measure the quantum of current which causes the circuit breaker to trip out, and recording means adapted to record the measured quantum.

Also according to the present invention, there is provided a method of operating an electrical circuit breaker monitor which is characterised by measuring, by using a current measuring means, the quantum of current which causes the circuit breaker to trip out, and recording the measured quantum.

A feature of the invention provides for the measuring means to be a peak detector and the recording means to be a counter, adapted to record accumulated numeric counts proportional to the magnitude of the detected peak, and preferably counts for successive peaks accumulated in a running total.

An embodiment of the invention is described below by way of example only, and with reference to the accompanying drawing, which is a diagrammatic representation of one example of a circuit breaker monitor according to the invention.

As illustrated, an input line 1 passes through a circuit breaker indicated diagrammatically by numeral 2 and on to a variety of user positions from numeral 3.

A measuring means 4 is located in the line 1 prior to the circuit breaker 2. The measuring means 4 is a peak detector located in series in the input line, and will detect peaks of currents of a magnitude which would cause the circuit breaker to trip.

Connected via a line 5 to the peak detector, is a recorder 6, which comprises a counter with an analogue to digital converter, so that a count will be given in accordance with the magnitude of the peak measured by the peak detector 4. This count will be displayed on a display output 7, and each time the counter counts further magnitudes of peaks, the output play 7 will be updated to maintain a running total.

In use, each time the circuit breaker trips, a new total count will be shown on the display 7 of the recorder, and the total count will reflect the magnitude of the current which has loaded the circuit breaker in the period under consideration. This

count will be translated into the number of permissable counts before maintenance on the circuit breaker is required. After maintenance on the circuit breaker, the counter is reset to zero and a new counting cycle can commence.

It is considered that the invention provides useful apparatus for assisting in the maintenance of circuit breakers.

Many variations may be made to the above embodiment without departing from the scope of the invention. For example, the current measuring means need not be a peak detector, and may measure current as a function of time, and the recording means could be a drum graph or the like.

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WHAT WE CLAIM IS :-

1. A circuit breaker monitor comprising current measuring means adapted to measure the quantum of current which causes the circuit breaker to trip out, and recording means adapted to record the measured quantums.

2. A monitor as claimed in Claim 1 in which the measuring means is a peak detector.

3. A monitor as claimed in Claim 2 in which the recording means is a counter, adapted to record accumulated numeric counts proportional to the magnitude of the detected peaks.

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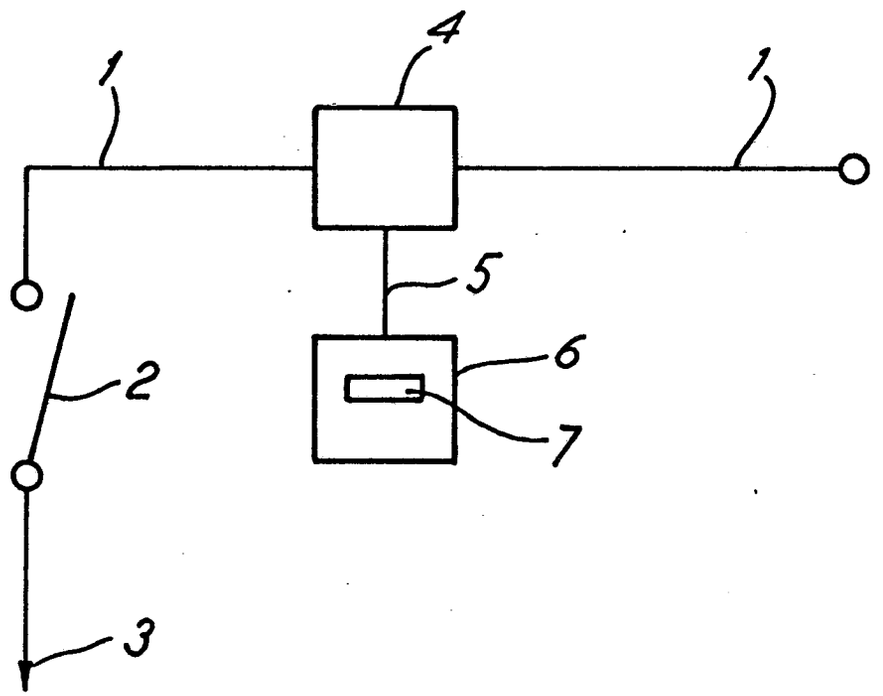
4. A monitor as claimed in Claim 3 in which the counts for successive peaks are accumulated in a running total.

5. A method of operating an electrical circuit breaker monitor which is characterised by measuring, by using a current measuring means, the quantum of current which causes the circuit breaker to trip out, and recording the measured quantum.

6. A method according to Claim 5 which involves recording accumulated numeric counts which are proportional to the magnitude of the detected peaks.

7. A method according to Claim 6 in which a running total of the numeric counts relating to successive peaks is kept.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EUROPEAN SEARCH REPORT

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EP 85 30 4097

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int Cl 4)
X	DE-A-2 640 921 (SIEMENS AG) * Claims 1,2; page 2, lines 1-3,16-25; page 3, lines 16-24; page 6, lines 7-15; figures 1-4 *	1,5	H 02 H 7/22
Y		1-7	

Y	US-A-3 678 372 (F.A. ELDER) * Abstract; column 3, lines 66-75; column 4, lines 1-3,14-18; figure 1 *	1-7	

X	DE-A-2 727 378 (SIEMENS AG) * Claims 1,2; page 3, lines 7-20; page 4, lines 18-34 *	1,5	
A		2-4,6, 7	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
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A	DE-A-1 936 552 (BROWN, BOVERI & CO. AG)		

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	30-01-1986	KAUFFMANN J.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
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