CLAIMS:

1. A method for detecting aperiodic, substantially erratic changes in the amplitude of at least one electric parameter, especially the current and/or the voltage, within an electric network, with a progression over time of the at least one electric parameter being recorded in a manner substantially faithful to the signal and a first parameter signal (15) thus being formed, characterized in that

- a predeterminable constant positive first value is assigned in a first step to each positive component of the first parameter signal (15) and/or a predeterminable constant negative second value is assigned to each negative component of the first parameter signal (15) for its respective duration, and a first rectangular signal (16) is formed in such a way;
- that in a subsequent second step rising or falling flanks of the first rectangular signal (16) are detected, a predeterminable constant third value unequal zero is assigned to the regions between two successively following rising or falling flanks, and the regions disposed in between are assigned the value zero, and a second rectangular signal (17) is thus formed;
- that in a subsequent third step a first pulse-duty factor of the second rectangular signal (17) is determined;
- that in a subsequent fourth step the first pulse-duty factor is compared with the pulse-duty factor 1:1 and that in the case of a deviation of the first pulse-duty factor from the pulse-duty factor 1:1 the detection of an aperiodic, substantially erratic change of the amplitude of the at least one electric parameter is output.

2. A method according to claim 1, characterized in that in the first step the first value is assigned to positive components of the first parameter signal (15) and the second value to negative components of the first parameter signal (15) between two temporally successive, substantially erratic changes which have a larger amplitude in relation to the first parameter signal (15) before the substantially erratic change.

3. A method according to claim 1 or 2, characterized in that the first value and the second value have identical amounts.

4. A method according to one of the claims 1 to 3, characterized in that for determining the pulse-duty factor of the second rectangular signal (17) it is checked for a predeterminable component of even-numbered harmonics of a first harmonic.

5. A method according to one of the claims 1 to 4, characterized in that the second rectangular signal (17) is transformed from the time range to an image range, and subsequently the even-numbered harmonics of a first harmonic are determined.

6. A method according to claim 5, characterized in that the second rectangular signal (17) is transformed from the time range to the frequency range, and subsequently the even-numbered harmonics of a first harmonic are determined.

7. A method according to one of the claims 1 to 6, characterized in that the second rectangular signal (17) is filtered by means of a filter arrangement (7), especially by means of a band-pass filter or comb filter, and subsequently the even-numbered harmonics of a first harmonic are determined.

8. A method according to claim 7, characterized in that the filter constants of the filter arrangement (7) are adapted to a determined frequency of a first harmonic.

9. A method according to one of the claims 1 to 8, characterized in that a signal with half the amount of the third value is added to or subtracted from the second rectangular signal (17), and a third rectangular signal is thus formed, and subsequently the third rectangular signal is checked for freedom from offset.

10. A method according to one of the claims 1 to 9, characterized in that the first parameter signal, which is especially a temporally non-periodic signal, is intermediately stored for a predeterminable period of time.

11. A detector (1) with a sensor (2) for recording a progression over time of the at least one electric parameter in a manner substantially faithful to the signal, characterized in that the detector (1) is arranged for detecting aperiodic, substantially erratic changes in the amplitude of at least one electric parameter, especially the current and/or the voltage, within an electric network, preferably according to a method according to one of the claims 1 to 10, characterized in that one output of the sensor (2) is applied to an input of a first unit (3) for forming a signum function, one output of the first unit (3) is applied to one input of a flank detector (4), one output of the flank detector (4) is applied to an input of a second unit (5) for determining a pulse-duty factor of a rectangular function, and one output of the second unit (5) is applied to an input of an output unit (6).

12. A detector (1) according to claim 11, characterized in that the second unit (5) is arranged as a filter arrangement (7), especially as a band-pass filter and/or a comb filter.

13. A detector (1) according to claim 11 or 12, characterized in that the second unit (5) is arranged as a transformation unit (8).

14. A detector (1) according to one of the claims 11 to 13, characterized in that the output unit (6) is arranged for triggering a tripping unit (10) of a switching device, especially a circuit breaker (11).

CLAIMS:

1. A circuit breaker (11) which comprises break contacts for switching off an electric network in a predeterminable manner, with the break contacts being triggerable by at least one tripping unit (10), characterized in that the circuit breaker has a detector (1) for detecting aperiodic, substantially erratic changes in the amplitude of at least one electric parameter within the electric network, and the tripping unit (10) is operatively connected with the detector (1).

2. A detector (1) with a sensor (2) for recording a progression over time of the at least one electric parameter in a manner substantially faithful to the signal, characterized in that the detector (1) is arranged for detecting aperiodic, substantially erratic changes in the amplitude of at least one electric parameter, especially the current and/or the voltage, within an electric network, preferably according to a method according to one of the claims 7 to 16.

3. A detector (1) according to claim 2, characterized in that one output of the sensor (2) is applied to an input of a first unit (3) for forming a signum function, one output of the first unit (3) is applied to one input of a flank detector (4), one output of the flank detector (4) is applied to an input of a second unit (5) for determining a pulse-duty factor of a rectangular function, and one output of the second unit (5) is applied to an input of an output unit (6).

4. A detector (1) according to claim 3, characterized in that the second unit (5) is arranged as a filter arrangement (7), especially as a band-pass filter and/or a comb filter.

5. A detector (1) according to claim 3 or 4, characterized in that the second unit (5) is arranged as a transformation unit (8).

6. A detector (1) according to one of the claims 3 to 5, characterized in that the output unit (6) is arranged for triggering a tripping unit (10) of a switching device, especially a circuit breaker (11).

7. A method for detecting aperiodic, substantially erratic changes in the amplitude of at least one electric parameter, especially the current and/or the voltage, within an electric network, with a progression over time of the at least one electric parameter being recorded in a manner substantially faithful to the signal and a first parameter signal (15) thus being formed, characterized in that

- a predeterminable constant positive first value is assigned in a first step to each positive component of the first parameter signal (15) and/or a predeterminable constant negative second value is assigned to each negative component of the first parameter signal (15) for its respective duration, and a first rectangular signal (16) is formed in such a way;
- that in a subsequent second step rising or falling flanks of the first rectangular signal (16) are detected, a predeterminable constant third value unequal zero is assigned to the regions between two successively following rising or falling flanks, and the regions disposed in between are assigned the value zero, and a second rectangular signal (17) is thus formed;
- that in a subsequent third step a first pulse-duty factor of the second rectangular signal (17) is determined;
- that in a subsequent fourth step the first pulse-duty factor is compared with the pulse-duty factor 1:1 and that in the case of a deviation of the first pulse-duty factor from the pulse-duty factor 1:1 the detection of an aperiodic, substantially erratic change of the amplitude of the at least one electric parameter is output.

8. A method according to claim 7, characterized in that in the first step the first value is assigned to positive components of the first parameter signal (15) and the second value to negative components of the first parameter signal (15) between two temporally successive, substantially erratic changes which have a larger amplitude in relation to the first parameter signal (15) before the substantially erratic change.

9. A method according to claim 7 or 8, characterized in that the first value and the second value have identical amounts.

10. A method according to one of the claims 7 to 9, characterized in that for determining the pulse-duty factor of the second rectangular signal (17) it is checked for a predeterminable component of even-numbered harmonics of a first harmonic.

11. A method according to one of the claims 7 to 10, characterized in that the second rectangular signal (17) is transformed from the time range to an image range, and subsequently the even-numbered harmonics of a first harmonic are determined.

12. A method according to claim 11, characterized in that the second rectangular signal (17) is transformed from the time range to the frequency range, and subsequently the even-numbered harmonics of a first harmonic are determined.

13. A method according to one of the claims 7 to 12, characterized in that the second rectangular signal (17) is filtered by means of a filter arrangement (7), especially by means of a band-pass filter or comb filter, and subsequently the even-numbered harmonics of a first harmonic are determined.

14. A method according to claim 13, characterized in that the filter constants of the filter arrangement (7) are adapted to a determined frequency of a first harmonic.

15. A method according to one of the claims 7 to 14, characterized in that a signal with half the amount of the third value is added to or subtracted from the second rectangular signal (17), and a third rectangular signal is thus formed, and subsequently the third rectangular signal is checked for freedom from offset.

16. A method according to one of the claims 7 to 15, characterized in that the first parameter signal, which is especially a temporally non-periodic signal, is intermediately stored for a predeterminable period of time.