CLAIMS

1. A system for physical quantity measurement and/or for position measurement with a bistable magnetic wire, which comprises excitation element (2) for creating of magnetic field, within range of which the bistable magnetic wire (1) is placed, which has a first end (11) and an oppositely placed second end (12), wherein the bistable magnetic wire (1) is adjusted for magnetization by a single Barkhausen jump from the first end (11) to the second end (12) or vice versa, and which also comprises a sensing element (3) for response receiving from the bistable magnetic wire (1),

characterized in that,

the excitation element (2) and bistable magnetic wire (1) are placed in a mutual position, in which the amplitude of the magnetic field excited by excitation element (2) at the first end (11) is different from the amplitude of the magnetic field excited by excitation element (2) at the second end (12).

2. The system for physical quantity measurement and/or for position measurement with the bistable magnetic wire according to claim 1, characterized in that, the difference in amplitude of the magnetic field at the first end (11) and at the second end (12) is at least 5%, preferably at least 10 %.

3. The system for physical quantity measurement and/or for position measurement with the bistable magnetic wire according to claim 1 or 2, characterized in that it is adapted to measure temperature and/or pressure and/or tension and/or magnetic field and/or linear position.

4. The system for physical quantity measurement and/or for position measurement with the bistable magnetic wire according to any of the claims 1 to 3, characterized in that the coil of receiving element (3) is separate from the coil of the excitation element (2).

5. The system for physical quantity measurement and/or for position measurement with the bistable magnetic wire according to any of the claims 1 to 4, characterized in that the bistable magnetic wire (1) has a diameter less than 50 μm, preferably less than 25 μm, especially preferably less than 15 μm.

6. The system for physical quantity measurement and/or for position measurement with the bistable magnetic wire according to any of the claims 1 to 5, characterized in that the bistable magnetic wire (1) is covered with a layer of insulating material, preferably with a layer of glass.

7. The system for physical quantity measurement and/or for position measurement with the bistable magnetic wire according to claim 6, characterized in that the glass has a thickness up to 20 μm.

8. The system for physical quantity measurement and/or for position measurement with the bistable magnetic wire according to any of the claims 1 to 7, characterized in that the length of the bistable magnetic wire (1) is at least 1000 times, preferably at least 10 000 times greater than the diameter of the metal core of the bistable magnetic wire (1).

9. The system for physical quantity measurement and/or for position measurement with the bistable magnetic wire according to any of the claims 1 to 8, characterized in that the excitation element (2) is placed asymmetrically to the position of the bistable magnetic wire (1).

10. The system for physical quantity measurement and/or for position measurement with the bistable magnetic wire according to any of the claims 1 to 9, characterized in that the excitation element (2) has an asymmetrical structure with different amplitude of magnetic fields at its ends.

11. The system for physical quantity measurement and/or for position measurement with the bistable magnetic wire according to claim 10, characterized in that the excitation element (2) is formed by a coil with a different winding density at first end (11) and second end (12).

12. The system for physical quantity measurement and/or for position measurement with the bistable magnetic wire according to any of the claims 1 to 11, characterized in that the longitudinal axis of the excitation element (2) is identical or parallel with the longitudinal axis of the bistable magnetic wire (1), or the longitudinal axis of the excitation element (2) deviates from the longitudinal axis of the bistable magnetic wire (1) within 30 degrees.

13. A method for physical quantity measurement and/or for position measurement with the bistable magnetic wire, wherein a variable magnetic field is transmitted by the excitation element (2), wherein at least one bistable magnetic wire (1) is placed within the range of the excited magnetic field, which is magnetized when the magnetic field changes by a single Barkhausen front jump from first end (11) to the second end (12) or vice versa and where the response of the bistable magnetic wire (1) is subsequently sensed by a sensing element (3), characterized in that the excitation element (2) and bistable magnetic wire (1) are maintained in a mutual position, in which the amplitude of the magnetic field excited by the excitation element (2) at the first end (11) is different from the amplitude of the magnetic field excited by the excitation element (2) at the second end (12).

14. The method for physical quantity measurement and/or for position measurement with the bistable magnetic wire according to claim 13, characterized in that the excitation magnetic field has a triangle-shaped magnitude waveform, preferably a symmetrical triangle-shaped, and the time T1 of the local maximum and the time T2 of the local minimum of response of the bistable magnetic wire (1) are evaluated.

15. The method for physical quantity measurement and/or for position measurement with the bistable magnetic wire according to claim 13 or 14, characterized in that the excitation magnetic field has a frequency in the zone, in which the bistable magnetic wire (1) has at least one local maximum of sensitivity for a particular type of measured quantity or position.

16. The method for physical quantity measurement and/or for position measurement with the bistable magnetic wire according to any of the claims 13 to 15, characterized in that when evaluating the signal received as a response from the bistable magnetic wire (1), the sum of the time T1 of local maximum and time T2 of local minimum of signal

are evaluated, preferably without taking into account the absolute amplitude of the signal.

17. The method for physical quantity measurement and/or for position measurement with the bistable magnetic wire according to claim 16, characterized in that when

evaluating the signal received as response from the bistable magnetic wire (1), the difference of the time T2 of local minimum and time T1 of local maximum of the signal is taken into account.

18. The method for physical quantity measurement and/or for position measurement with the bistable magnetic wire according to any of the claims 13 to 17, characterized in that the response of the bistable magnetic wire (1) intercept in the sensing element (3) is evaluated in the control unit (4).