CLAIMS

1. Intraocular pressure measuring and/or monitoring device (1) comprising

a contact lens (10) presenting an inner surface (101) and an outer surface (102), and

a pressure sensor (2) united with said contact lens (10) and located such that it is applied against an eye (8) of a user for sensing the intraocular pressure (IOP) of said eye (8) when said contact lens (10) is worn by said user,

characterized in that said contact lens (10) comprises a soft portion (11) as a base body and a rigid portion (12), said rigid portion (12) being adapted to at least partially rigidify a central portion of the inner surface (101) of said contact lens (10) so as to maintain said rigidified inner surface (101) with a curvature radius adapted to flatten at least a portion of the eye surface in contact with the pressure sensor (2) so as to reach a pressure equilibrium around the pressure sensor (2) when said contact lens (10) is worn by said user.

2. Intraocular pressure measuring and/or monitoring device according to claim 1, characterized in that the contact lens (10) is a soft contact lens and the rigid portion (12) is a rigid insert.

3. Intraocular pressure measuring and/or monitoring device according to claim 1 or 2, characterized in that the soft portion (11) at least partially surrounds the rigid portion (12).

4. Intraocular pressure measuring and/or monitoring device (1) according to claim 2, characterized in that said rigid portion (12) has a generally meniscus or convex-concave lens shape.

5. Intraocular pressure measuring and/or monitoring device (1) according to claim 3 or 4, characterized in that said rigid portion (12) is smaller in dimension compared to the soft portion (11) and is centered in said contact lens.

6. Intraocular pressure measuring and/or monitoring device (1) according to any one of the preceding claims, characterized in that said rigid portion (12) comprises a plurality of through holes (123).

7. Intraocular pressure measuring and/or monitoring device (1) according to claim 6, characterized in that said contact lens comprises soft material connections between the inner and outer surfaces through the through holes (123) of said rigid portion (12).

8. Intraocular pressure measuring and/or monitoring device according to any one of preceding claims, characterized in that at least one of the curvature radii of the rigidified inner surface (101) is larger than the one of the outer surface (102).

9. Intraocular pressure measuring and/or monitoring device according to any one of the preceding claims, characterized in that it comprises a plurality of pressure sensors (2).

10. Intraocular pressure measuring and/or monitoring device (1) according to any one of preceding claims, characterized in that the soft edges of the soft portion (11) material of the contact lens (10) is configured so as to adapt its shape to the shape of said eye (8) and center a said contact lens (10) on said eye (8) and stabilize said contact lens in the tangential sliding direction when said user is wearing said contact lens (10).

11. Intraocular pressure measuring and/or monitoring device (1) according to any one of preceding claims, characterized in that said soft portion (11) of said contact lens (10) is made of a material chosen in the group of hydrogels, silicone-hydrogels and silicones.

12. Intraocular pressure measuring and/or monitoring device (1) according to any one of claims 1 to 10, characterized in that said rigid portion (12) of said contact lens (10) is made of a material chosen in the group of polymers, ceramics, glasses, metals, RGP and the like.

13. Intraocular pressure measuring and/or monitoring device (1) according to any one of claims 1 to 10, characterized in that any one of the soft portion (11) and the rigid portion (12) of said contact lens (10) is made of a material having a tunable stiffness or a stiffness gradient.

14. Intraocular pressure measuring and/or monitoring device (1) according to any one of preceding claims, characterized in that said contact lens (10) further comprises an antenna (4) and a microprocessor (5) for telemetry powering and data transfer.

15. Intraocular pressure measuring and/or monitoring device (1) according to one of the preceding claims, characterized in that the pressure sensor (2) is compensated in temperature such that the effect of temperature on the value output of the pressure sensor (2) is compensated by a specialized electronic circuit.

16. Intraocular pressure measuring and/or monitoring device (1) according to any one of preceding claims, characterized in that said pressure sensor (2) is in direct contact with the eye of the user when said user is wearing said contact lens (10).

17. Intraocular pressure measuring and/or monitoring device (1) according to any one of claims 1-15, characterized in that said pressure sensor (2) is in indirect contact with the eye of the user when said user is wearing said contact lens (10).

18. Intraocular pressure measuring and/or monitoring device (1) according to claim 17, characterized in that said pressure sensor (2) is located within a cavity (121) formed in an inner concave side of said rigid portion (12), and wherein said cavity (121) is filled with a pressure transmitting filler material (122) that covers said pressure sensor (2) such that a layer of said filler material (122) is located between said pressure sensor (2) and the inner surface of the contact lens (10).

19. Intraocular pressure measuring and/or monitoring device (1) according to claim 18, characterized in that said filler material (122) is a material softer than the rigid portion (12).

20. Intraocular pressure measuring and/or monitoring device (1) according to claim ~~any of the preceding claims~~18, characterized in that said filler material (122) is more rigid than the material of said soft portion (11).

21. Intraocular pressure measuring and/or monitoring device (1) according to claim~~s 1 to 19~~18, characterized in that said filler material (122) is softer than the material of said soft portion (11).

22. Intraocular pressure measuring and/or monitoring device (1) according to claim~~s 1 to 19~~18, wherein said filler material (122) is of the same softness as the material of said soft portion (11).

23. Intraocular pressure measuring and/or monitoring device (1) according to claim 22, characterized in that said filler material (122) is the same material as the material of said soft portion (11).

24. Intraocular pressure measuring and/or monitoring device (1) according to claim~~s 1 to 19~~18, wherein said filler material (122) is a liquid.

25. Intraocular pressure measuring and/or monitoring device (1) according to one of the claims 18 to 24, characterized in that said cavity (121) is formed in the center of said rigid portion (12).

26. Intraocular pressure measuring and/or monitoring device (1) according to one of the claims 18 to 25, characterized in that said inner surface (101) of the contact lens (10) beneath said cavity (121) presents a softer surface than the rest of the inner surface (101) beneath the rigid portion (12).

27. Intraocular pressure measuring and/or monitoring device (1) according to one of the claims 17 to 25, characterized in that said inner surface (101) of the contact lens (10) beneath said cavity (121) presents a surface softness similar than the rest of the inner surface (101) beneath the rigid portion (12).

28. Intraocular pressure measuring and/or monitoring device (1) according to any one of preceding claims, characterized in that said rigidified inner surface (101) of the contact lens (10) is surrounded by contact lens edges (13) made of soft material.

29. Intraocular pressure measuring and/or monitoring device (1) according to any one of preceding claims, characterized in that it further comprises an annular groove (14) provided on the inner surface (101) of the contact lens (10) under the rigidified inner surface of the contact lens (10).

30. Kit comprising:

- an intraocular pressure measuring and/or monitoring device (1) according to one of claims 1 to 29;

- a portable recording device (6) configured for communicating with said intraocular pressure measuring and/or monitoring device (1) and for storing data received from said intraocular pressure measuring and/or monitoring device (1).

31. Kit according to claim 30, wherein said portable recording device (6) is configured for powering said intraocular pressure measuring and/or monitoring device (1) over a wireless inductive communication channel (15).

32. Kit according to the one of claims 30 or 31, comprising an intraocular pressure measuring and/or monitoring device (1) according to one of claims 1 to 29, wherein said portable recording device (6) is configured for communicating with ~~said~~ two <u>said</u> intraocular pressure measuring and/or monitoring devices (1) and for storing data received from said two intraocular pressure measuring and/or monitoring devices (1).

33. Intraocular pressure monitoring system comprising:

- an intraocular pressure measuring and/or monitoring device (1) according to one of the claims 1 to 29;

- a portable recording device (6) configured for communicating with said pressure measuring and/or monitoring device (1) and for storing data received from said intraocular pressure measuring and/or monitoring device (1);

- a computing device (7) configured for communicating with said portable recording device (6) for receiving and/or processing and/or storing data received from said portable recording device (6).

34. Intraocular pressure monitoring system according to claim 33, wherein said portable recording device (6) is configured for powering said pressure measuring and/or monitoring device (1) over a wireless inductive communication channel (15).

35. Intraocular pressure monitoring system according to any one of claims 33 or 34 comprising two intraocular pressure measuring and/or monitoring device (1) according to one of claims 1 to 29, wherein said portable recording device (6) is configured for communicating with said two intraocular pressure measuring and/or

monitoring devices (1) and for storing data received from said two intraocular pressure measuring and/or monitoring devices (1).