Claims

1. Optical sensor device, comprising a reference body (3) and at least one sensing transducer (5), wherein the sensing transducer is arranged for receiving an input action, and wherein the sensing transducer is movably arranged relative to the reference body for moving relative to the reference body in response to the input action,

wherein the device further comprises an optical fiber (12) and one or more transmission arms (10, 38) including a first transmission arm (10), wherein the optical fiber comprises an intrinsic fiber optic sensor (13), and wherein the optical fiber is connected with a first connecting part (15) thereof to the first transmission arm and with a second connecting part (16) thereof to an element exterior to said first transmission arm, the first connecting part and the second connecting part being on either side of the intrinsic fiber optic sensor (13),

wherein a base (25) of the first transmission arm (10) being connected at a first part thereof with the reference body (3) and at a second part thereof with the sensing transducer (5), said optical fiber being connected at a location along the first transmission arm remote from the base thereby converting the input action received by the sensing transducer into a sensing action applied to the optical fiber such as to modify strain in the optical fiber dependent on said input action.

2. Optical sensor device according to claim 1, wherein the optical fiber (12) is connected with the second connecting part thereof to at least one of a group comprising: the reference body, a further element that is fixed relative to the reference body.

3. Optical sensor device according to claim 1, wherein at least one of said one or more transmission arms further comprises a second transmission arm (38) having a base which is connected at a first part thereof with the reference body and with a second part thereof with the at

least one sensing transducer, and wherein the optical fiber is connected with the second connecting part thereof at a location along the second transmission arm remote from said base,

wherein the second transmission arm (38) is arranged for converting the input action into a further sensing action applied to the optical fiber, such that upon receipt of the input action the further sensing action applied by the second transmission arm is applied in a different direction than the sensing action applied by the first transmission arm (10).

4. Optical sensor device according to any of the previous claims, wherein, for at least one said transmission arms (10, 38), said connections with the sensing transducer (5) and the reference body (3) are formed of flexible hinges (52, 53, 55, 56).

5. Optical sensor device according to any of the previous claims, wherein at least one of the transmission arms comprises a shape such that in cross section a size of said at least one transmission arm (10) near the base (25) thereof is wider than a size near said location for connecting the optical fiber.

6. Optical sensor device according to any of the previous claims, wherein at least one of the transmission arms (10, 38) comprises a construction such that weight of said at least one transmission arm is concentrated near the base (25) thereof relative to said location for connecting the optical fiber.

7. Optical sensor device according to any of the previous claims, wherein the at least one sensing transducer (5) is arranged for receiving the input action directed in a first direction, and wherein at least one of the transmission arms (10, 38) is shaped such as to apply the sensing action in a direction transverse to the first direction.

8. Optical sensor device according to any of the previous claims, wherein the at least one sensing transducer (5) is arranged for receiving the input action directed in a first direction, and wherein at least one of the

transmission arms (10, 38) is shaped such as to apply the sensing action in a same or opposite direction parallel to the first direction.

9. Optical sensor device according to claim 8, wherein said at least one transmission arm (10, 38) comprises an angled longitudinal shape.

10. Optical sensor device according to any of the previous claims, wherein the reference body (3) is located in between a first and second sensing transducer of said at least one sensing transducer.

11. Optical sensor device according to any of the claims 1-9, wherein the at least one sensing transducer (5) is shaped such as to at least partly enclose the reference body (3) such as to be adjacent to the reference body at least at two sides thereof.

12. Optical sensor device according to any of the previous claims, wherein the sensing transducer comprises at least one element of a group comprising: an inertial mass such as to provide an accelerometer, a deformable body such as to provide a pressure sensor; and/or

wherein the intrinsic fiber optic sensor (13) comprises at least one of a fiber bragg grating, a fiber laser, or a multicore fiber.

13. Optical sensor device according to any of the previous claims, wherein at least the reference body (3), the at least one of the first and second transmission arm (10, 38), and the sensing transducer are integrally formed of a same material such as to form a monolithic body.

14. Sensor apparatus comprising one or more optical sensor devices according to any of the previous claims for sensing one or more input actions applied in one or more directions.

15. Cable comprising at least one of a longitudinal sensor apparatus according to claim 14, or one or more optical sensor devices according to any of the claims 1-13.