WHAT IS CLAIMED IS:

1. A powered ophthalmic lens, the powered ophthalmic lens comprising:

a contact lens including an optic zone and a peripheral zone; and

a pupil diameter sensor system incorporated into the contact lens for measuring pupil diameter, the pupil diameter sensor system including at least one sensor, a system controller operatively associated with the at least one sensor and configured for determining the diameter of the pupil and output a control signal based on pupil diameter, and at least one actuator configured to receive the output control signal and implement a predetermined function.

2. The powered ophthalmic lens according to Claim 1, wherein at least one sensor comprises a thin strip mounted across the optic zone such that it can sense fully constricted and fully dilated pupils.

3. The powered ophthalmic lens according to Claim 2, wherein the thin strip comprises an array of photosensors mounted to face in towards the iris of the eye.

4. The powered ophthalmic lens according to Claim 3, wherein the array of photosensors comprise transparent photosensors.

5. The powered ophthalmic lens according to Claim 3, wherein the array of photodetectors comprise thin silicon photosensors.

6. The powered ophthalmic lens according to Claim 1, wherein the at least one sensor comprises an array of individual sensors positioned around the perimeter of the optic zone.

7. The powered ophthalmic lens according to Claim 6, wherein the array of individual sensors comprise photosensors.

8. The powered ophthalmic lens according to Claim 1, wherein the pupil dilation sensor further comprises a signal processor configured to receive signals from the at least one sensor, perform digital signal processing, and output one or more signals to the system controller.

9. The powered ophthalmic lens according to Claim 8, wherein the signal processor comprises associated memory.

10. The powered ophthalmic lens according to Claim 1, wherein the pupil diameter sensor system comprises a power supply.

11. The powered ophthalmic lens according to Claim 1, wherein the at least one sensor comprises an impedance sensor.

12. The powered ophthalmic lens according to Claim 1, wherein the at least one sensor comprises a neuromuscular activity sensor.

WHAT IS CLAIMED IS:

1. A powered ophthalmic lens, the powered ophthalmic lens comprising:

a contact lens including an optic zone and a peripheral zone; and

a pupil diameter sensor system incorporated into the contact lens for measuring pupil diameter, the pupil diameter sensor system including at least one sensor, a system controller operatively associated with the at least one sensor and configured for determining the diameter of the pupil and output a control signal based on pupil diameter, and at least one actuator configured to receive the output control signal and implement a predetermined function, wherein at least one sensor comprises a thin strip mounted across the optic zone such that it can sense fully constricted and fully dilated pupils.

2. The powered ophthalmic lens according to Claim 1, wherein the thin strip comprises an array of photosensors mounted to face in towards the iris of the eye.

3. The powered ophthalmic lens according to Claim 2, wherein the array of photosensors comprise transparent photosensors.

4. The powered ophthalmic lens according to Claim 2, wherein the array of photodetectors comprise thin silicon photosensors.

5. The powered ophthalmic lens according to Claim 1, wherein the pupil dilation sensor system further comprises a signal processor configured to receive signals from the at least one sensor, perform digital signal processing, and output one or more signals to the system controller.

6. The powered ophthalmic lens according to Claim 5, wherein the signal processor comprises associated memory.

7. The powered ophthalmic lens according to Claim 1, wherein the pupil diameter sensor system comprises a power supply.

8. The powered ophthalmic lens according to Claim 1, wherein the at least one sensor comprises an impedance sensor.

9. The powered ophthalmic lens according to Claim 1, wherein the at least one sensor comprises a neuromuscular activity sensor.