WHAT IS CLAIMED IS:

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

a contact lens; and

an eyelid position sensor system incorporated into the contact lens, the eyelid position sensor system including a sensor array having a plurality of individual sensors vertically spaced from each other to detect eyelid position,

a system controller configured to sample each individual sensor in the sensor array to detect eyelid position and provide an output control signal, and

at least one alert mechanism configured to receive the output control signal and capable of at least one of providing an alert and storing data in response to a determination by the system controller that the eyelid has been closed for a period of time indicative of at least one of onset of sleep and drowsiness.

2. The powered ophthalmic lens according to Claim 1, wherein the alert mechanism comprises a light source positioned on the lens to provide a light onto at least one of a retina of a wearer of the lens and the lens itself as the alert.

3. The powered ophthalmic lens according to Claim 1, wherein the alert mechanism comprises a transducer to vibrate an eye of a wearer of the lens as the alert.

4. The powered ophthalmic lens according to Claim 1, wherein the alert mechanism comprises an electrical simulator configured to stimulate at least one of a corneal surface and at least one sensory nerve of a cornea.

5. The powered ophthalmic lens according to Claim 1, wherein the alert mechanism provides optic zone modification of an optic zone of the contact lens.

6. The powered ophthalmic lens according to Claim 1, further comprising at least one electronic communication component in communication with the alert mechanism and configured to transmit a notification to an external device in response to the alert received from the alert mechanism.

7. The powered ophthalmic lens according to Claim 1, further comprising a clock, and

wherein the alert mechanism comprises associated memory for storing an initiation of sleep in response to the determination of onset of sleep by the system controller and a termination of sleep in response to a determination of a wearer waking up by the system controller, the alert mechanism configured to store a time stamp from the clock with the initiation of sleep and the termination of sleep.

8. The powered ophthalmic lens according to Claim 7, further comprising at least one electronic communication component connected to the memory and the clock, and the at least one electronic communication component configured to retrieve data from the memory and a time stamp from the clock in response to an external inquiry for the stored data.

9. The powered ophthalmic lens according to claim 1, wherein the system controller operates in one of at least two states based on a state input received by the system controller, where the at least two states include an awake operation state and an asleep operation state and the at least two states control the operation of the at least one alert mechanism as to whether the alert is provided based on the detection of onset of sleep by the system controller.

10. The powered ophthalmic lens according to Claim 1, wherein

the plurality of individual sensors comprise photosensors for detecting light incident on the eye; and

the eyelid position sensor system further comprises

a multiplexer configured to receive multiple inputs from the photosensors and output a single signal,

an analog-to-digital converter configured to convert the analog signal from the amplifier to a sampled, digital signal for further signal processing, and

a digital signal processor configured to receive an output from the analog-to-digital converter and perform digital signal processing, including one or more of filtering, processing and detecting sampled data to permit incident light detection for downstream use.

11. The powered ophthalmic lens according to Claim 10, wherein the digital signal processor comprises associated memory storing two sets of blink templates and blink masks for use by the digital signal processor based on operational state of the lens as determined in response to wearer instructions.

12. The powered ophthalmic lens according to Claim 1, further comprising a power supply.

13. The powered ophthalmic lens according to Claim 1, wherein the plurality of individual sensors comprise capacitive touch sensors for detecting contact or proximity and outputting a signal indicative thereof; and

the sensor system further comprises sensor conditioners that output a signal proportional to capacitance for downstream use.

14. The powered ophthalmic lens according to Claim 13, wherein the eyelid position sensor system further comprises a multiplexer configured to receive multiple inputs from the sensor conductors and output a single signal to the system controller.

15. The powered ophthalmic lens according to Claim 1, wherein the eyelid position sensor system further comprises a communication channel for coordinating action between pairs of powered contact lenses.

16. The powered ophthalmic lens according to Claim 1, further comprising

a pupil position system having at least one accelerometer for tracking eye movement, the pupil position system in communication with the system controller such that the system controller samples the at least one accelerometer to detect pupil position; and

wherein the system controller uses both pupil position and eyelid position to determine at least one of the onset of sleep and drowsiness.

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

a contact lens; and

an eyelid position sensor system incorporated into the contact lens, the eyelid position sensor system including at least one sensor strip having a plurality of vertical points along its length to detect eyelid position,

a system controller configured to sample each individual sensor in the sensor strip to detect eyelid position and provide an output control signal, and

at least one alert mechanism configured to receive the output control signal and capable of at least one of providing an alert and storing data in response to a determination by the system controller that the eyelid has been closed for a period of time indicative of at least one of onset of sleep and drowsiness.

18. The powered ophthalmic lens according to Claim 17, wherein the alert mechanism comprises at least one of the following:

a light source positioned on the lens to provide a light onto at least one of a retina of a wearer of the lens and the lens itself as the alert,

a transducer to vibrate an eye of a wearer of the lens as the alert,

an electrical simulator configured to stimulate at least one of a corneal surface and at least one sensory nerve of a cornea, and

a transducer that provides optic zone modification of an optic zone of the contact lens.

19. The powered ophthalmic lens according to Claim 17, further comprising a clock, and

wherein the alert mechanism comprises associated memory for storing an initiation of sleep in response to the determination of onset of sleep by the system controller and a termination of sleep in response to a determination of a wearer waking up by the system controller, the alert mechanism configured to store a time stamp from the clock with the initiation of sleep and the termination of sleep.

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

an intraocular lens; and

an eyelid position sensor system incorporated into the intraocular lens, the eyelid position sensor system including a sensor array having a plurality of individual sensors vertically spaced from each other to detect eyelid position, a

system controller configured to sample each individual sensor in the sensor array to detect eyelid position to determine at least one of drowsiness and sleep onset of a wearer and provide an output control signal, and at least one alert mechanism configured to receive the output control signal and capable of at least one of providing an alert and storing data in response to a determination by the system controller that the eyelid has been closed for a period of time indicative of at least one of sleep and drowsiness.