

PRODUCT SPECIFICATION DOCUMENT

Submitted as Assignment 2 – Topics in Medical Electronics

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Submitted by Group 8



*Product –
eye.for.detail*

(eye ball)

Index

| | |
|--|---|
| 1. Introduction | 2 |
| 1.1 Purpose | 2 |
| 1.2 Scope of the product | 2 |
| 2. General Description | 2 |
| 2.1 Product functions in accordance with the structure of the product | 3 |
| 2.2 Assumptions and Dependencies | 3 |
| 2.3 Speculated reasons behind the location of eyes | 4 |
| 3. Change Management Process | 4 |
| 4. Possible Malfunctions and diseases | 4 |

eye.for.detail

1. Introduction

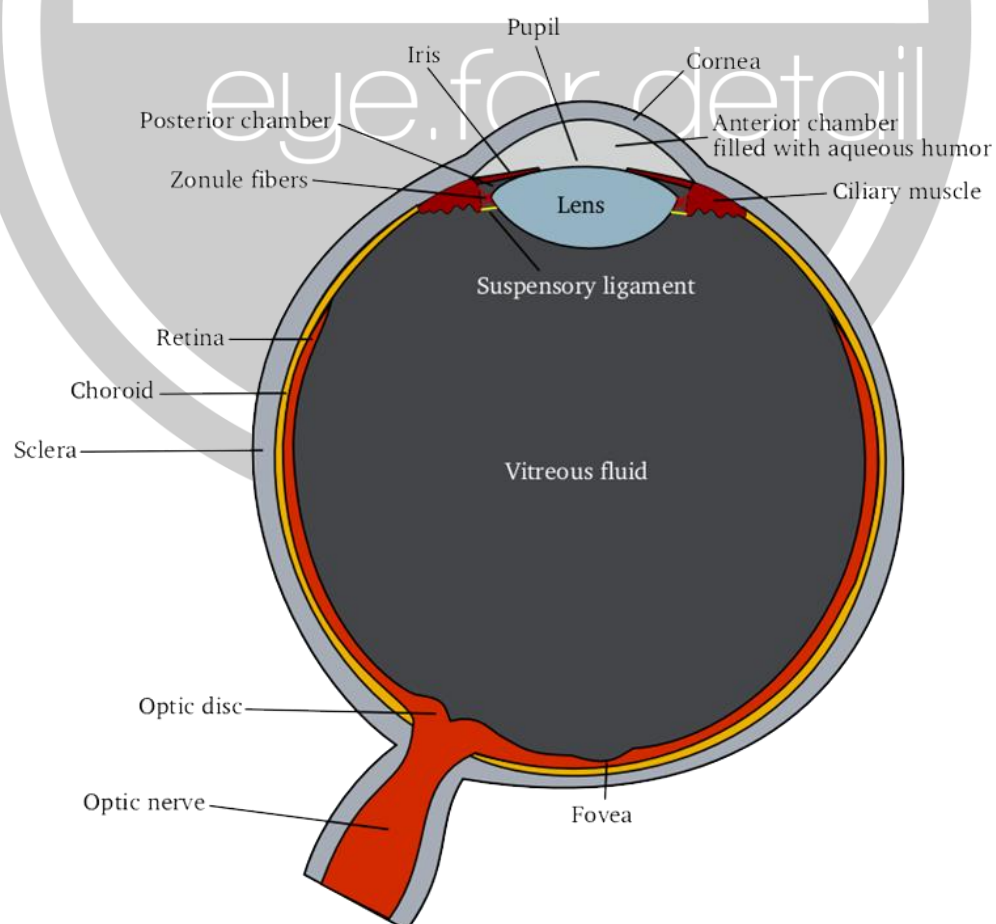
1.1 Purpose

Eye.for.detail is meant to serve all with the most essential purpose of providing the window to the world. Some important information can only be perceived to our brain just by knowing the eye gestures and expressions. This product - eye.for.detail is just meant for that purpose.

1.2 Product Scope

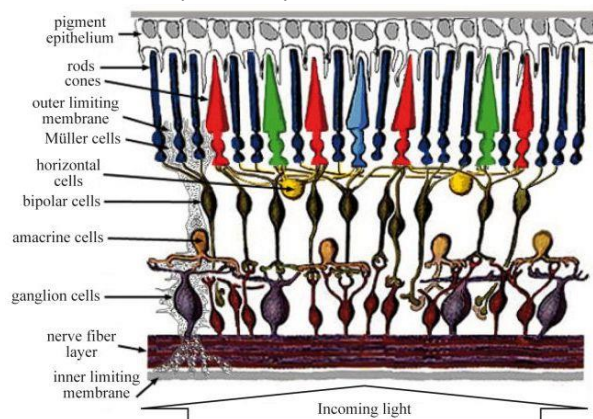
Eye.for.detail is very friendly, comfortable, easy to use and open to future improvisations with a large degree of variations. Major eye diseases can be easily rectified and corrected with large correctible margin.

2. General Description



2.1 Product Functions in accordance with the structure of the product

- The eye ball is surrounded by bony tissue, Bony wall(inside) and Bony orbit(Outside).
- The thick top outer layer surrounding the iris is called the Sclera and serves to protect the delicate structure, provide strength and protection to the eye.
- Cornea is the transparent front part of the eye. It is referred as the “window of the eye”. It accounts for two-thirds of eye’s total optical power.
- Pupil lies in the middle of the eye behind cornea. The primary function of the pupil is to control the amount of light entering the eye.
- The lens is the clear structure located behind the pupil. Its primary function is to provide fine-tuning for focusing and reading. The lens performs this function by altering its shape.
- Choroid provides oxygen and nourishment to the tissues of the eye.
- Cilliary body is a broad ring shaped band of thin muscle fibres which plays a vital role in vision adjustment of the eye.
- Iris is the colored part of the eye surrounding the pupil. The primary function of Iris is to control the size of the pupil as It expands and contracts muscles of the pupil.
- The inner most layer of the eye-ball is retina. Its primary function is to transmit images to the brain. It has very complex structure.
- Vitreous Body is the clear gel-like substance located inside the eye's cavity. Its purpose is to provide a spherical shape to the eye. It also plays an important role in visual adjustment.
- The retina consists of fine nerve tissue and acts like the film in a camera. Its primary function is to transmit images to the brain



structure of retina

- Optic Nerve carries images from the retina to the brain.

2.2 Assumptions and Dependencies

- 2.2.1 Eye.for.detail is a robust, enhanced visual imaging product, although, it needs to be taken care of. Any corrosive substance MUST not be taken/used in the vicinity of the product.
- 2.2.2 All age groups can use the standardised version of eye.for.detail, since the size of eye ball in a human body remain same lifelong.
- 2.2.3 Supporting product accessories must be used with utmost care and precautions while plugging them to eye.for.detail.

2.3 Speculated reasons behind the positioning of the eye in human body

- 2.3.1 Eyes are situated near the brain because their messages may arrive to the brain quickly.
- 2.3.2 It is also essential that this organ need to be placed on the upper side of the body to have longer range of vision.
- 2.3.3 Reason for two eyes – Only then can we have a proper sense of 3d imaging because it's when atleast 2 rays meet, can we actually perceive the depth of an object placed.
- 2.3.4 Reason for eyes to be in the anterior part of the body rather than posterior – Since our limb movements are forward oriented, it is in our best interest that eyes are situated to see what's coming ahead.
- 2.3.5 Reason for the little spacing between the two eyes- Since each of our eye has a field of vision, its only when the two fields intersect, we are able to perceive the exact shape and size of the object placed in front of us.

3.Change Management Process

- 3.1.1 Whenever eye.for.detail gets disrupted due to any accident, injury or due to exposure of any corrosive substance, contact the nearest eye hospital and also contact the nearest eye.for.detail outlet for new home delivery of the product. Delay in contacting the eye speciality hospital may lead to complete damage of the accompanying system accessories.

4. Possible Malfunctions and Diseases

4.1 Myopia -

is a condition of the eye where the light that comes in does not directly focus on the retina but in front of it, causing the image that one sees when looking at a distant object to be out of focus, but in focus when looking at a close object.

4.2 Hypermetropia -

is a defect of vision caused by an imperfection in the eye (often when the eyeball is too short or the lens cannot become round enough), causing difficulty focusing on near objects, and in extreme cases causing a sufferer to be unable to focus on objects at any distance.

4.3 Cataract -

A **cataract** is a clouding of the lens inside the eye which leads to a decrease in vision. It is the most common cause of blindness and is conventionally treated with surgery.