**Software requirements analysis**

**Model: iDOLPHIN (iDOLPHIN-S & iDOLPHIN-View)**

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| **META BIOMED CO., LTD.** |

**Revision History**

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| **Revision No.** | **Revision history** | **Date** |
| 0 | Initial release, alpha-test | 2013.09.06 |
| 1 | Modified according to EN 62366, Class A | 2014.07.03 |
| 2 | According to Non-conformity, Modify Class B | 2016.02.19 |
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# Software Requirements Specification (SRS)

# Hardware Requirements

## Microprocessors

### Camera Initialization (RH-01)

Initailization of camera specification.

### ROM Initialization (RH-02)

Initialization and Save preperation of bin file generated by Firmware

## Memory device

### Hard Disk (RH-03)

Save image and video.

### ROM (RH-04)

Upload 512Kbytes (FPGA Bin File)/64KBytes file on ROM to operate Hardware.

## Sensors

### Camera (RH-05)

Device to acquire image in substance.

### Optical fiber (RH-06)

Optical fiber to supply a source of light to camera.

## Energy sources

### Camera (RH-07)

There is need to supply power to generate camera for image aquiring.

## Safety features

### Prevention of overcurrent (RH-08)

In certain situation, Overcurrent may be generated. To prevent this point, implement circuit.

### Noise (RH-09)

Noise is generated by current and other circuit. This noise affects to image on the screen.

## Communications

### Save

* + - 1. Image (RH-10)

Save the image. File format is .jpeg.

* + - 1. Video (RH-11)

Save the video. File format is .avi.

### Rotation (RH-12)

Roation of screen.

### Brightness (RH-13)

Adjustment of monitor brightness.

### Folder (RH-14)

Specification of location to be saved file.

### Zoom (RH-15)

Zoom-in and Zoom-out function.

### AEC (RH-16)

Function to adjust the AEC.

# Programming Language Requirements

## Program Language

### Main UI & Sequence (RP-01)

Editor : MS visual studio

Debugger : MS visual studio

Compiler

C compiler : MS visual studio

Assembler : MS visual studio

Linker : MS visual studio

### Firmware (RP-02)

Editor : FPGA

Compiler Xilinx FPGA

Assembler : Xilinx FPGA

Linker : Xilinx FPGA

## Programming Tools and Library (RP-03)

Microsoft visual 2013

## Program Size (RP-04)

About 80 MB

# Interface Requirements

## PC (RI-01)

Operate device connected with hardware

## Monitor (RI-02)

The device to display image to user

## Mouse (RI-03)

Control software by mouse

## Keyboard (RI-04)

Control software by mouse

## USB (RI-05)

Control Device (Viewer Box and etc…)

# Software Performance and Functional Requirements

## Device limitations due to software (RS-01)

|  |  |  |
| --- | --- | --- |
| Device | Description | Range |
| Display monitor | Display device supporting min.  Resolution 1280\*1024. | -Monitor: 15 inch |
| CPU | iDOLPHIN-View is used for efficient image processing. | -Support iDOLPHIN-View |
| RAM | Minimum memory size for efficient image reconstruction is required. | - 4 GB or above |
| Mother board | - PCI slot for plugging SICC card | -VGA slot: 1 or above |

## Internal software tests and checks (RS-02)

|  |  |  |
| --- | --- | --- |
| Check items | Description | Valid condition |
| License validity | Check license validity to be used by permitted users only. | - Within the term of validity  - Permitted system |
| DB compatibility | Check DB fields for DB compatibility. | - The presence of field supported |
| Disk space | - Check available memory size of disk frequently and display the warning message continuously if the remaining capacity is not enough. | - Less than 10% for free space |

## Error and interrupt handling (RS-03)

Software handles no interrupt and internal timer interrupt.

## Fault detection, tolerance, and recovery characteristics (RS-04)

Status of USB connection, and do re-connect if connection is lost. Software checks the validity of image and discards it if not valid.

## Safety requirements (RS-05)

|  |  |
| --- | --- |
| Item | Requirement |
| FPS | When excessive framerate is generated, data loss occurs and the software is not worked normally. So average FPS must be maintained 35. |
| Overcurrent | When overcurrent is generated, device may be stopped or break. Therefore the current must be set so that it is not excess. |

## Timing and memory requirements

### System Boot Time (RS-06)

: ≤ 300 second

## Identification of off-the-shelf software, if appropriate

### Version (RS-07)

Conduct version management systemically.

## Image Processing

### Brightness (RS-08)

Adjusting brightness

### RGGB (RS-09)

Value of camera is converted RGGB in PC. This RGGB Value is converted RGB.

### Rotation (RS-10)

Conduct image processing to rotate screen.