

**PO3\_DGW\_Digital watch**

**(SRS)**

Table 1 Status Table

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| **Document Name** | **Author** | **Version** | **Update Date** | **Status** |
| SRS | Mostafa Nader | 1.3 | 07/02/2020 | Proposed |

**DOCUMENT HISTORY**

Table 2 Document History

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| --- | --- | --- | --- | --- |
| **Version** | **Description of Change** | **Author** | **Date** | **Document Status** |
| 1 | Initial creation of SRS Document | Marina Medhat  Ahmed Qandeel | 23/01/2020 | Draft |
| 1.1 | Added requirements regarding the SIQ document answers | Marina Medhat  Ahmed Qandeel | 28/01/2020 | Draft |
| 1.2 | Added requirements regarding the SRS Review. | Marina Medhat | 7/02/2020 | Proposed |
| 1.3 | Added head titles for the requirements and updated the table of content after reviewing the SRS document | Mostafa Nader | 7/02/2020 | Proposed |

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# INTRODUCTION

## **Purpose**

This is version 1 of the requirements specification for a simple Digital watch with alarm with settings and Stop Watch.

## **Glossary**

Definitions, acronyms and abbreviations

Digital watch consists of 3 main Functions:

1-Clock.

2.Alarm.

3.Stop Watch.

### **clock**

a device that has its own value of time in hours, minutes and seconds, which it displays and which it maintains accurately relative to when the time was last reset.

In this document, a "conventional watch" means such a clockwork or electric device in the real world; "watch" means a computer operating system function that returns

at least an absolute or elapsed time as measured by the operating system.

### **alarm**

a device which is a conventional clock with an additional time value setting and an attached alarm bell. When the clock time reaches the time of the "alarm setting" it rings the bell.

In this specification, "alarm clock" means the software application that imitates many of the functions of a conventional clock with an alarm.

### **ring the bell**

the continuous alert sound (the term "audible signal" is too pedantic!) that an alarm clock can make. It may be a buzzer or chime or other tone

(compare mobile phone "ring tones" which no longer resemble a bell).

### **clock time**

the time relative to the last reset of the clock.

## **General description**

The Digital Watch System that has A Clock with a simple alarm clock in an on-screen window and Stop watch. The user can select an option of the three options

(View Clock, setting stop watch, Setting alarm).

The clock provides an alarm and allows the user to set alarms and provide a Stop watch.

# FUNCTIONAL REQUIREMENTS

## **Time-Display Mode Requirements**

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_01\_V01.2 | Req\_ PO3\_DGW\_CYRS\_01\_V01.2 | The system in the Time-display mode has four variables(HrVar, MinVar, SecVar, CycleLength) that represents the real time | - | Displaying these values on the LCD |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_02\_V01.2 | Req\_ PO3\_DGW\_CYRS\_01\_V01.2 | The SecVar Variable increments with delay 1 sec. and when it reaches 60 it resets to zero and increments the MinVar by 1 and when the MinVar reaches 60 it resets to zero and increments the HrVar by 1 | - | Displaying these values on the LCD |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_03\_V01.2 | Req\_ PO3\_DGW\_CYRS\_01\_V01.2 | When the HrVar reaches 12 the CycleLegnth flag will toggle. If this flag is zero Am will be displayed and if this flag is one Pm will be displayed | - | Displaying these values on the LCD |

## **Alarm mode requirements**

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_04\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_02\_V01.1 | The system in the Alarm mode has three variables(AlHrVar, AlMinVar, AlCycleLength) that represents the settled alarm time | - | Displaying these values on the LCD |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_05\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_02\_V01.1 | The Software keeps comparing the alarm variables with the time variable and if AlHrVar is equal HrVar & AlMinVar is equal MinVar & AlCycleLength is equal CycleLength the buzzer is fired | - | Sound is played by the buzzer for sixty seconds or until the user presses a specific button |

## **Stop-Watch mode requirements**

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_06\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_03\_V01.2 | The system in the StopWatch mode has thee variables(StHrVar, StMinVar, StSecVar) that represents the Stopwatch time | - | Displaying these values on the LCD |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_07\_V01.2 | Req\_ PO3\_DGW\_CYRS\_03\_V01.2 | The Three Variables (StHrVar, StMinVar, StSecVar) start with zeros and when the user start Stopwatch The SecVar Variable increments with delay 1 sec. and when it reaches 60 it resets to zero and increments the MinVar by 1 and when the MinVar reaches 60 it resets to zero and increments the HrVar by 1 | - | Displaying these values on the LCD |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_08\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_04\_V01.1 | The SW saves the last values of the Stopwatch and displays it on the LCD when the user press to stop the Stopwatch without incrementing of any variable. | - | Displaying these values on the LCD |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_09\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_04\_V01.1 | The SW saved the last values of the Stopwatch and Continue increment it when the user press to Play the Stopwatch again . | - | Displaying these values on the LCD |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_10\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_05\_V01.1 | The SW reset the values of the Stopwatch and display it on the LCD when the user press to reset the Stopwatch  So each variable of (StHrVar, StMinVar, StSecVar) equal to zero and the SW return increment each of them again . | - | Displaying these values on the LCD |

## **System components (buttons) requirements**

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_11\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | The system has a Current\_Mode at a time {Time-display\_mode = 0 or Alarm\_Mode = 1 or StopWatch\_Mode =2} | - | - |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_12\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | The system has a Current\_Mode starts with zero and when mode\_button pressed by the user this variable (Current\_Mode) will increment by one and if Current\_Mode equals 3 will reset to zero again and so on. | User Press on the Mode button. | changing the Current  Mode on the Digital watch. |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_13\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | The SW will compare the Current\_Mode variable  If equal 0, the system will be in Time-display mode | User Press on the Mode button. | changing the Current  Mode on the Digital watch to Time-display mode. |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_14\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | The SW will compare the Current\_Mode variable  If equal 1, the system will be in Alarm mode. | User Press on the Mode button. | changing the Current  Mode on the Digital watch to alarm mode. |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_15\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | The SW will compare the Current\_Mode variable  If equal 2, the system will be in StopWatch mode. | User Press on the Mode button. | changing the Current  Mode on the Digital watch to StopWatch mode. |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_16\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | In case of Time-display mode the two buttons are one to adjust between (Hours, Minutes, Seconds) and the second one for incrementing the cell of (Hours or Minutes or second). | - | - |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_17\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | In case of Time-display mode the first button to adjust between (Hours, Minutes, Seconds) so there are four variables (setCell=0, setHR =0, setMin=1, setSec=2). | - | - |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_18\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | In case of Time-display mode The system has a setCell starts with zero and when adjust button is pressed by the user this variable (setCell) will increment by one and if setCell equals 3 will reset to zero again and so on. | User Press on the adjust button. | SetCell Variable increment by one and change the position on LCD. |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_19\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | The SW will compare the setCell variable  If equal 0, the position on LCD will be in hours’ cell. | User Press on the adjust button. | changing the position on LCD to be in hours cell. |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_20\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | The SW will compare the setCell variable  If equal 1, the position on LCD will be in minutes’ cell. | User Press on the adjust button. | changing the position on LCD to be in minutes  cell. |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_21\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | The SW will compare the setCell variable  If equal 2, the position on LCD will be in seconds cell. | User Press on the adjust button. | changing the position on LCD to be in seconds cell. |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_22\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | In case of Time-display mode the second button to increment the variable of the Current cell so the SW will check it and if this button is pressed one of these variables will increment by one (HrVar or MinVar or SecVar). | User Press on the incrementing button. | changing the values of (hours or minutes or seconds) LCD. |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_23\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | In case of Alarm mode, the two buttons are one to adjust between (Hours, Minutes, Seconds) and the second one for incrementing the cell of (Hours or Minutes or second). | - | - |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_24\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | In case of Alarm mode, the first button to adjust between (Hours, Minutes, Seconds) so there are four variables (AlsetCell=0, AlsetHR =0, AlsetMin=1, AlsetSec=2). | - | - |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_25\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | In case of Time-display mode The system has a AlsetCell starts with zero and when adjust button is pressed by the user this variable (AlsetCell) will increment by one and if AlsetCell equals 3 will reset to zero again and so on. | User Press on the adjust button. | AlSetCell Variable increment by one and change the position on LCD. |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_26\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | The SW will compare the AlsetCell variable  If equal 0, the position on LCD will be in hours’ cell. | User Press on the adjust button. | changing the position on LCD to be in hours cell. |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_27\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | The SW will compare the AlsetCell variable  If equal 1, the position on LCD will be in minutes’ cell. | User Press on the adjust button. | changing the position on LCD to be in minutes cell. |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_28\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | The SW will compare the AlsetCell variable  If equal 2, the position on LCD will be in seconds cell. | User Press on the adjust button. | changing the position on LCD to be in seconds cell. |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_29\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | In case of Alarm mode the second button to increment the variable of the Current cell so the SW will check it and if this button is pressed one of these variables will increment by one (AlMinVar,AlSecVar,AlHrVar). | User Press on the incrementing button. | changing the values of (hours or minutes or seconds) LCD. |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_30\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | In case of Alarm mode when the Buzzer is Playing if the user press on any button the buzzer will stop. | User Press on any button. | The Buzzer will Stop. |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_31\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | In case of StopWatch mode, the two buttons are one for start and stop and resume and the second one for reset. | - | - |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_31\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | In case of StopWatch mode, the first button to start and stop and resume so there are four variables (Start=0, Stop=1, Resume=2, Status=0). | - | - |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_32\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | In case of StopWatch mode, the system has a Status starts with zero and when adjust button is pressed by the user this variable (Status) will increment by one and if Status equals 3 will reset to zero again and so on. | User Press on the status button. | Status Variable increment by one and change the Status of StopWatch on LCD (incrementing or stop). |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_33\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | The SW will compare the Status variable  If equal 0, the StopWatch start increment its values (StHrVar, StMinVar, StSecVar). | User Press on the status button. | Start Incrementing the values of stopwatch on LCD. |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_34\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | The SW will compare the Status variable  If equal 1, the StopWatch stop increment its values (StHrVar, StMinVar, StSecVar) and the SW saved the last values and display it on LCD. | User Press on the status button. | stopIncrementing the values of stopwatch and display the last values on LCD. |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_35\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | The SW will compare the Status variable  If equal 2, the StopWatch resume increment its values (StHrVar, StMinVar, StSecVar). | User Press on the status button. | Resume Incrementing the values of stopwatch on LCD. |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_36\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | In case of StopWatch mode, the second button to reset so there is flag =0. | - | - |

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| Requirement ID | Covers | Description | Inputs | Outputs |
| Req\_PO3\_DGW\_SRS\_37\_ V01.2 | Req\_ PO3\_DGW\_CYRS\_06\_V01.2 | In case of StopWatch mode, the second button is pressed the flag=1 and the values of stopwatch will be zeros (StHrVar, StMinVar, StSecVar). | User press on reset button. | The values of stopwatch will be zeros and display zeros on LCD. |

Table 3 Reference Table

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| --- | --- | --- |
| Reference Input Documents | Version | Status |
| CYRS | 1.5 | Proposed |