

Table of Contents

List of Figures	iv
1 INTRODUCTION	1
1.1 PROBLEM STATEMENT	1
1.2 OBJECTIVE	2
2 PROPOSED SAFETY MONITORING SYSTEM	3
2.1 DESCRIPTION OF PROPOSED SAFETY MONITORING SYSTEM . . .	4
2.2 DESCRIPTION OF SCHEMATIC DIAGRAM	5
3 HARDWARE DESCRIPTION	7
3.1 R5F102AA RENESAS MICROCONTROLLER	8
3.1.1 Features	8
3.1.2 A/D Converter	10
3.2 GSM	10
3.2.1 Features	10
3.2.2 Hardware Description	11
3.2.3 Testing And General Commands To Configure GSM	15
3.3 ALPHA-NUMERIC LIQUID CRYSTAL DISPLAY	15
3.3.1 Pin Description Of JHD162A	17
3.3.2 List Of Commands Used	18

3.3.3	Interfacing JHD162A With Microcontroller And Commands To Display A Message	18
3.4	FUEL LEVEL SENSOR	20
3.5	DRIVER CIRCUIT L293D	21
3.5.1	Schematic Diagram	22
3.6	DC MOTOR	23
3.7	LIGHT-EMITTING DIODE (LED)	23
3.8	BUZZER	24
3.9	RELAY	25
3.10	IGNITION SWITCH	27
3.11	POWER SUPPLY	28
3.12	WORKING FLOW OF THE PROPOSED SAFETY MONITORING SYSTEM	30
4	SOFTWARE DESCRIPTION	31
4.1	SOFTWARE REQUIREMENTS	31
4.1.1	Cube Suite+ (v1.10)	31
4.1.2	Renesas Flash Programmer	34
4.1.3	Android	38
4.1.4	Eclipse	39
5	ADVANTAGES, DISADVANTAGES AND APPLICATION	44
5.1	ADVANTAGES	44
5.2	DISADVANTAGES	44
5.3	APPLICATION	45
6	RESULTS	46
6.1	SNAPSHOTS OF THE RESULTS OBTAINED	46
7	CONCLUSION AND FUTURE SCOPE	50
7.1	CONCLUSION	50
7.2	FUTURE SCOPE	50
	References	51

List of Figures

2.1	Block Diagram Of The Proposed Safety Monitoring System	3
2.2	Schematic Diagram Of Proposed Safety Monitoring System	6
3.1	Block Diagram Of R5F102AA	9
3.2	Hardware Description Of GSM Module	11
3.3	SIM900A GSM Module	12
3.4	MAX232 IC Of GSM	12
3.5	Serial Port/DB9 Connector Of GSM	13
3.6	Power Supply Socket Of GSM	13
3.7	SIM Card Slot	14
3.8	16X2 Alpha-Numeric LCD Display	17
3.9	Interfacing Of Alpha-Numeric LCD Display	18
3.10	Working Flow Of LCD Display	19
3.11	Fuel Sensor	20
3.12	Pin Diagram Of L293D	21
3.13	Circuit Diagram Of L293D	22
3.14	Flow Chart Of Working Of Driver Circuit	22
3.15	12V,100rpm DC Geared Motor	23
3.16	Light-Emitting Diode	24
3.17	Schematic Diagram Of Buzzer	25
3.18	Basic Relay Circuit	26
3.19	Schematic Diagram Of Relay	27
3.20	Toggle Switch	27
3.21	Power Supply	28

3.22	LM317 Adjustable Regulator Circuit Diagram	29
3.23	Working Flow Of The Proposed Safety Monitoring System	30
4.1	A View Of Cube Suite+	32
4.2	A View Of Controller Selecting Window	32
4.3	A View Of Code Generator Window	33
4.4	A View Of Peripherals Selecting Window	33
4.5	A View Of Watchdog Timer Selecting Window	34
4.6	A View Of Main File Window	34
4.7	A View Of Welcome Window	35
4.8	A View Of Controller Selecting Window	35
4.9	A View Of Communication Interface Window	36
4.10	A View Of Frequency Window	36
4.11	A View Of Power Supply Selecting Window	37
4.12	A View Of Dumping Procedure Window	37
4.13	A View Of Eclipse	40
4.14	A View Of Creating An APP	41
4.15	A View Of Selecting Target SDK	42
4.16	A View Of Browsing workspace	42
4.17	A View Of Editor Window With Graphical Layout	43
4.18	A View Of Creating Using Button	43
6.1	Snapshot Of The Model	46
6.2	View Of Application In The Cellphone	47
6.3	Snapshot Of The SMS Received By The Owner	47
6.4	Snapshot Of The View In Application For LOCK	48
6.5	Outcome After Pressing LOCK Button	48
6.6	Snapshot Of The View in Application for UNLOCK	49
6.7	Outcome After Pressing UNLOCK Button	49