**Table of Contents:**

|  |  |
| --- | --- |
| Page | Section |
| i | Letter of Transmittal |
| ii | Title Page |
| iii | Declaration Page |
| iv | Table of Contents |
| v | List of Figures |
| vi | List of Tables |
| 1 | Acknowledgements |
| 2 | Abstract |
| 3 | Introduction |
| 4-10 | System Design |
| 11-14 | Background Theory |
| 15 | Conclusions |
| 16 | References |
| 17 | Bibliography |
| 18-29 | Full electrical drawings |
| 30-34 | Panel layouts |
| 35-39 | Pin designations |
| 40-41 | BOM |
| 42 | Block Diagram |
| 43-54 | Program flowcharts |
| 55-78 | Full program listing |

**List of Figures:**

|  |  |
| --- | --- |
| Figure 5-1: | Schematic of Cell voltage sensors using Instrumentation Amplifiers and Voltage Dividers |
| Figure 8-1: | Battery pack schematic |
| Figure 9-1: | Simplified schematic of an INA126P Instrumentation Amplifier package |
| Figure 10-1: | Simple schematic of a linear op-amp buffer |
| Figure 10-2: | Schematic of a linear op-amp/transistor power amplifier/buffer |
| Figure 11-1: | Schematic of a voltage divider |

**List of Tables**

Table 12-1: Nextion HMI commands used in the program