

# Contents

## 1 Introduction

1.1 Purpose and Scope . . . . .	1-1
1.2 Organization . . . . .	1-1
1.3 Requirements Terminology . . . . .	1-2
1.4 Changes from Technical Advisory to Technical Reference . . . . .	1-2

## 2 General Information

2.1 Purpose of Fuses . . . . .	2-1
2.2 Power Plant . . . . .	2-1
2.3 Fuse Operation . . . . .	2-1
2.4 Rationale . . . . .	2-3
2.4.1 Energy Source . . . . .	2-3
2.4.2 Interrupt Current Rating . . . . .	2-3
2.4.3 Operate Current versus Time Curve . . . . .	2-4
2.4.4 Voltage . . . . .	2-5
2.4.5 Current . . . . .	2-5
2.4.6 Marking . . . . .	2-5

## 3 General Requirements

3.1 Fail-Safe Design . . . . .	3-1
3.2 Ampere Range . . . . .	3-1
3.3 Engineering, Installation and Maintenance . . . . .	3-1
3.3.1 Compatibility . . . . .	3-1
3.3.2 Code Compliance . . . . .	3-1
3.3.3 Fire Resistance . . . . .	3-2
3.3.4 Environmental Requirements . . . . .	3-3
3.3.5 Electrical Isolation . . . . .	3-3
3.3.6 Safety and Hazards . . . . .	3-4
3.3.7 Toxic Materials . . . . .	3-4
3.3.8 Sparing . . . . .	3-4
3.3.9 Marking of Fuses . . . . .	3-4

## 4 Electrical Requirements

4.1 Operating Characteristics . . . . .	4-1
4.1.1 Voltage Rating . . . . .	4-1
4.1.2 Interrupt Current Rating . . . . .	4-1
4.1.3 Operate Time Vs. Operate Current Curve . . . . .	4-1
4.1.4 Resistance . . . . .	4-2
4.1.5 Peak Let-Through Current . . . . .	4-3
4.1.6 Individual Fuse Continuous Rating . . . . .	4-3

## 5 Physical Design

5.1 Shock and Vibration . . . . .	5-1
5.2 Earthquake and Office Vibration . . . . .	5-1
5.3 Paint . . . . .	5-1
5.4 Cooling . . . . .	5-1
5.5 Heating . . . . .	5-1
5.6 Materials . . . . .	5-1
5.7 Shipping Temperature and Humidity . . . . .	5-2
5.8 Packaging Design Considerations . . . . .	5-2
5.9 Human Factors . . . . .	5-2
5.10 Dimensions . . . . .	5-2

## 6 Quality Assurance, Documentation and Training

6.1 Product Reliability and Predictability . . . . .	6-1
6.2 Hardware Quality Assurance Plan . . . . .	6-1
6.3 Documentation . . . . .	6-1
6.4 Training Requirements . . . . .	6-2

## 7 Test Procedures

7.1 General Tests and Inspections for Section 3 . . . . .	7-1
7.1.1 Fail-Safe Design (Section 3.1†) . . . . .	7-1
7.1.2 Ampere Range (Section 3.2†) . . . . .	7-1
7.2 Engineering, Installation and Maintenance . . . . .	7-1
7.2.1 Compatibility (Section 3.3.1†) . . . . .	7-1
7.2.2 Code Compliance (Section 3.3.2†) . . . . .	7-2
7.2.3 Fire Resistance (Section 3.3.3†) . . . . .	7-2
7.2.4 Environmental Requirements (Section 3.3.4†) . . . . .	7-2
7.2.5 Electrical Isolation (Section 3.3.5†) . . . . .	7-2
7.2.6 Safety and Hazards (Section 3.3.6†) . . . . .	7-2
7.2.7 Toxic Materials (Section 3.3.7†) . . . . .	7-3
7.2.8 Sparing (Section 3.3.8†) . . . . .	7-3
7.2.9 Marking of Fuses (Section 3.3.9†) . . . . .	7-3
7.3 Electrical Requirements . . . . .	7-3
7.3.1 Test Circuit . . . . .	7-3
7.3.2 Voltage Rating (Section 4.1.1†) . . . . .	7-3
7.3.3 Interrupt Rating (Section 4.1.2†) . . . . .	7-4
7.3.4 Operating Characteristics (Section 4.1.3†) . . . . .	7-4
7.3.5 Resistance (Section 4.1.4†) . . . . .	7-4
7.3.6 Peak Let-Through Current (Section 4.1.5†) . . . . .	7-4
7.3.7 Individual Fuse Continuous Rating (Section 4.1.6†) . . . . .	7-4
7.4 Physical Design . . . . .	7-5
7.4.1 Shock and Vibration (Section 5.1†) . . . . .	7-5
7.4.2 Earthquake and Office Vibration (Section 5.2†) . . . . .	7-5
7.4.3 Paint (Section 5.3†) . . . . .	7-5
7.4.4 Cooling (Section 5.4†) . . . . .	7-5

7.4.5 Heating (Section 5.5†) . . . . .	7-5
7.4.6 Materials (Section 5.6†) . . . . .	7-5
7.4.7 Shipping Temperature and Humidity (Section 5.7†) . . . . .	7-5
7.4.8 Packaging Design Considerations (Section 5.8†) . . . . .	7-6
7.4.9 Human Factors (Section 5.9†) . . . . .	7-6
7.4.10 Dimensions (Section 5.10†) . . . . .	7-6
7.5 Quality Assurance, Documentation, and Training . . . . .	7-6
7.5.1 Product Reliability and Predictability (Section 6.1†) . . . . .	7-6
7.5.2 Hardware Quality Assurance Plan (Section 6.2†) . . . . .	7-6
7.5.3 Documentation (Section 6.3†) . . . . .	7-6
7.5.4 Training Requirements (Section 6.4†) . . . . .	7-7

**Appendix A: References**

## List of Figures

Figure 2-1	Power Plant and Distribution System . . . . .	2-2
Figure 2-2	Typical Operate Time versus Operate Current Curve . . . . .	2-4
Figure 4-1	Operate Time versus Operate Current Curve . . . . .	4-2
Figure 5-1	Physical Drawings for Fuses . . . . .	5-5

## List of Tables

Table 3-1	Insulation Test Voltages . . . . .	3-3
Table 4-1	Maximum Continuous Operating Current . . . . .	4-3
Table 4-2	Determination of Maximum Continuous Operating Current . . . . .	4-4
Table 5-1	Physical Size and Maximum Current Value . . . . .	5-3
Table 5-2	Physical Dimensions . . . . .	5-4