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## RECORD OF AMENDMENTS

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1 INTRODUCTION

1.1 Preface

This document is intended to provide guidance on the requirements of portable generators used to power Traffic Signal Controllers (TSC) in situations where mains power has been lost.

1.2 Scope

This document outlines the recommended functional and technical requirements of the portable generator set intended to be connected to a Traffic Signal Controller or to a UPS that is powering a Traffic Signal Controller.

1.3 References and Applicable Documents

1.3.1 Australian Standards

<p>| | | |</p>
<table>
<thead>
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<tbody>
<tr>
<td>[1]</td>
<td>AS/NZS 3000</td>
<td>Wiring Rules</td>
</tr>
<tr>
<td>[2]</td>
<td>AS/NZS 3010</td>
<td>Electrical installations—Generating sets</td>
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1.3.2 Australian Regulatory Requirements

These are covered by the requirements of AS/NZS 3010[2].

1.3.3 RMS Specifications and Documents

There are no applicable RMS Specifications referred to in this Technical Guidance:

1.3.4 RMS Drawings

<p>| | | |</p>
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<tr>
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<tbody>
<tr>
<td>[4]</td>
<td>VE 516-82</td>
<td>Typical Connection Diagram UPS to Signal Controller</td>
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1.4 Compliance with Specifications

The portable generators used at TCS sites where not otherwise specified, shall be in accordance with the relevant Australian Standards, where such exist, and in their absence, with the appropriate International Standard such as IEC, IEEE, ISO, TIA and ITU-T.

1.5 Precedence of Specifications

In the event of any conflict between the referenced Specifications, the order of precedence shall be:
(a) Australian Regulatory Requirements
(b) This Technical Guidance;
(c) Australian Standards; and then
(d) Other International Specifications i.e. IEC, IEEE, ISO, TIA and ITU-T.

## 2 DEFINITIONS AND GLOSSARY OF TERMS

For the purposes of this Technical Guidance, the following definitions and abbreviations shall apply:

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>device</td>
<td>Any self-contained electrical/electronic equipment</td>
</tr>
<tr>
<td>equipment</td>
<td>Refers to any ITS device covered by this Technical Guidance unless the context dictates otherwise</td>
</tr>
<tr>
<td>IEC</td>
<td>International Electrotechnical Commission</td>
</tr>
<tr>
<td>IEEE</td>
<td>Institute of Electrical and Electronics Engineers</td>
</tr>
<tr>
<td>ISO</td>
<td>International Standards Organisation</td>
</tr>
<tr>
<td>ITS</td>
<td>Intelligent transport system; also known as intelligent transportation system</td>
</tr>
<tr>
<td>ITU-T</td>
<td>International Telegraph Union</td>
</tr>
<tr>
<td>RMS</td>
<td>Means Roads and Maritime Services, which is a New South Wales Government agency</td>
</tr>
<tr>
<td>TIA</td>
<td>Telecommunications Industry Association</td>
</tr>
<tr>
<td>this T.G.</td>
<td>Means Technical Guidance TSI-TG-003</td>
</tr>
<tr>
<td>UPS</td>
<td>Uninterruptible Power Supply</td>
</tr>
</tbody>
</table>
3 GENERAL

In general most off-the-shelf Generators can be used, however to discharge RMS’ community responsibilities the following requirements should be considered when purchasing Generators for RMS use.

4 FUNCTIONAL REQUIREMENTS

4.1 The portable generator shall provide a 240V single phase supply with a power rating of between 1kVA to 3kVA.

TSC sites with the change to LED Lanterns now typically draw less than 1kVA, but may have other ITS equipment connected. RMS has historically used 3kVA generators to ensure it could support TCS sites with QH or incandescent lanterns. All TCS sites now only have LED lanterns.

4.2 The portable generator shall automatically shut down on no load, and be equipped with a shutdown override button.

The shutdown feature is required to ensure if the lead from the generator to the TCS is disconnected, damaged or cut either inadvertently or maliciously, no live parts are left exposed.

The shutdown override button shall be a momentary push button requiring the technician to keep it pressed while starting the generator and connecting the load without the generator shutting down. See Figure 1 below for an example.

Figure 1 Shutdown Override Button
4.3 The portable generator shall provide a fixed or detachable power lead with a minimum length of 2 meters to connect the generator supply output to the 15A generator socket in either a TCS housing [3] or a UPS housing [4]. See Figure 2 below for an example.

![Figure 2 Detachable Power Lead](image)

4.4 It is recommended that the portable generator be fitted with a key operated on/off switch.

This key lock allows a generator to operate unattended and ensure it cannot be inadvertently or maliciously switched off. See Figure 3 below for an example.

![Figure 3 On/Off Key Lock](image)
5 ELECTRICAL REQUIREMENTS

5.1 The portable generator shall comply with AS/NZS 3010[2].

5.2 The portable generator and any associated leads shall comply with AS/NZS 3000[1], except where noted below.

5.3 Any RCD on the portable generator supply output/s shall be removed or bypassed.

Note: As the generator typically powers a Traffic Signal Intersection, it is considered that the disconnection of the TCS by an RCD could cause a danger greater than earth leakage current to the general public. See AS3000 Section 2.6.3.2.1 Exception 5 [1]

5.4 The chassis of the portable generator shall be connected via its power lead to the earth of the TCS or UPS.

6 MECHANICAL REQUIREMENTS

6.1 It is recommended that the portable generator be fitted with a lock on its Fuel Tank.

This is to prevent fuel being siphoned when the generator is unattended. See Figure 4 below for an example.

![Figure 4 Fuel Lock](image)

6.2 It is recommended that portable generator be fitted with a secure attachment point.

The secure attachment point is used to allow the portable generator to be mechanically attached to a TCS site to avoid its removal by 3rd parties when left unattended.
6.3 It is recommended that the portable generator be supplied with a suitable length of armoured cable or chain to allow it to be mechanically attached to a TCS site. See Figure 5 for an example.

![Attachment Chain/Cable](image)

Figure 5 Attachment Chain/Cable

6.4 It is recommended that the fixed or detachable power lead from the portable generator be an armoured power cable so to protect it inadvertent damage from site work or the public.