SMPS BASED INTEGRATED POWER SUPPLY

1. Introduction

The SMPS based Integrated Power Supply (IPS) system used for railway signalling is modular in design. It consists of the following modules:

(i) AC Distribution Panel (ACDP)

(ii) DC Distribution Panel (DCDP)

(iii) SMPS based Float cum Boost Charger (FRBC) Panel

<table>
<thead>
<tr>
<th>Sr.</th>
<th>Equipment</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Relay Internal</td>
<td>24-32V, 5/10A OR 60-66V,5A</td>
</tr>
<tr>
<td>2.</td>
<td>Relay External</td>
<td>24-40V, 5/10A OR 60-66V,5A</td>
</tr>
<tr>
<td>3.</td>
<td>Axle Counter</td>
<td>24-32V, 5/10A</td>
</tr>
<tr>
<td>4.</td>
<td>Block Local UP and DN</td>
<td>12-40V, 1 A</td>
</tr>
<tr>
<td>5.</td>
<td>Panel Indication</td>
<td>12-28 V,5/10A</td>
</tr>
<tr>
<td>6.</td>
<td>Block Line UP and DN</td>
<td>12-40V, 1 A</td>
</tr>
<tr>
<td>7.</td>
<td>Block Tele UP and DN</td>
<td>3-6V, 0.1 A</td>
</tr>
</tbody>
</table>

Auto Float Mode

The float voltage of each rectifier module is set as

<table>
<thead>
<tr>
<th>No. of cells</th>
<th>Auto Float mode voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>VRLA Cells</td>
<td>Conv. LA Cells</td>
</tr>
<tr>
<td>55</td>
<td>2.25 x 55 = 123.8 V</td>
</tr>
</tbody>
</table>

Auto Boost Mode

The Boost voltage of each rectifier module is set as

<table>
<thead>
<tr>
<th>No. of cells</th>
<th>Auto Boost mode voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>VRLA Cells</td>
<td>Conv. LA Cells</td>
</tr>
<tr>
<td>55</td>
<td>2.3 x 55 = 126.5 V</td>
</tr>
</tbody>
</table>
Indications on Front Panels

- DC-DC Converter
- Automatic Voltage Regulator

Inverter

- Fan Fail
- Input On
- Output On
- Inverter Fail
- Load On Inverter
- Start
- Stop
- Reset
- Output Voltage
- AC Input

AC Input: 32A, 415 V AC

Fuses

Maintenance Checkpoints

1. DCDP
   - Check O/P voltage of each DC-DC Converter on DCDP common digital voltmeter
   - Adjustment of Converter output voltage:
     - Pull DC-DC Converter from front.
     - Connect test points to Common Digital Voltmeter
1. Parallel check of converters:
   - Switch off one converter with ON/OFF switch.
   - Observe output of other converters in parallel sharing the load.

2. ACDP
   - Check O/P voltage current of inverters, AVRs and step down transformers with on digital voltmeter provided on ACDP.

   - Ensure auto change over between inverter 1 and 2 by On/Off MCB.

   - Check auto change over between inverters and AVRs.

   - Ensure all the connectors of subsystems are properly inserted.
Battery Maintenance

• Cleaning of all cells near its terminals periodically.
• Reading of all cell’s voltage with Charger ON and Charger OFF.
• Boosting of Sick cell using Sick cell Charger.
• Applying petroleum jelly over the terminals for LMLA batteries.
• Periodically recording specific gravity of all cells.
• Periodically checking of electrolytic level of cells.
• Boosting of Sick cell using Sick cell Charger.
• Battery room should be properly ventilated.
• Connect the polarity of the batteries in right position.

Disclaimer

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