

Government of India

Ministry of Railways

**Schedule of Technical Requirements (STRs) for vender approval
for manufacture and supply
For**

Power Supply Equipment

Signal Directorate

Research Designs & Standards Organisation

Manak Nagar, Lucknow - 226011

MARCH - 2015

Scope:

The "Schedule of Technical Requirements of power supply" No. SIQ 0110 covers the norms for machinery & plants required for production, testing equipment for quality assurance and infrastructure for manufacturing of Power Supply Equipments for Railway Signaling applications. Vendor shall also comply other relevant laws of the country and quality norms issued by RDSO time to time.

Power Supply Equipment

List of specifications for various types of Power Supply Equipment

S.No	Description	Specification No.
1	Transformer - CLS, 110/12	IRS:S 59/77
2	Transformer - 230/110	IRS:S 72/88
3	Transformer - Indication H, I & L type	IRS:S 62/92
4	Transformer - Indication Supply	IRS:S 83/92
5	Battery Charger - Self Regulating	IRS:S 86/2000
6	Battery Charger -Track feed	IRS:S 89/ 2013
7	Battery Charger - Dual Bank	IRS:S 85/92
8	Battery Charger - MFVR Batteries	IRS:S 93/96 (B)
9	Converter - DC-DC	IRS:S 96/2000
10	Transformer - Rectifier set	IRS:S 91/ 2014
11	Inverter - Sine Wave	IRS:S 82/92
12	Voltage Regulator - Ferro Resonant	IRS:S 74-89
13	SMPS based IPS	RDSO/SPN/165/ 2012
14	Power supply arrangement for LC gate / I B working / I Relay hut.	RDSO/SPN/215/2015
	(Solar Photo Voltaic (SPV) module outsources from RDSO approved Sourced)	

Power Supply Equipments

I. Essential machinery and plants required for production -

SN	Description	Applicable for
1	Coil winding machine	All Items
2	Vacuum Impregnation plant	All Items
3	Temperature controlled oven	All Items
4	Vertical drilling machine	All Items
5	Temperature controlled soldering station	All Items
6	Facilities for Spray painting/ Power coating *	All Items
7	Wave soldering machine/DIP soldering machine	Item no 13 & 14

* Note: Required if rack and cabinets are manufactured by the firm.

II. Essential testing equipment required for Quality Assurance -

SN	Description	Applicable for
1	Test bench mounted with true r.m.s 4½ digit current, voltage and power meters for AC/DC measurement	All Items
2	Variac (25 Amp, 0-300V)	All Items
3	Portable AC & DC ammeter, voltmeter, AC wattmeter, Power factor meter	All Items
4	LCR bridge	All Items
5	Digital megger 500V DC	All Items
6	Milli ohm meter	All Items
7	High voltage tester 0-5KV/50Hz AC	All Items
8	Induced high voltage tester 0-500V/ 100Hz AC	Item no. 1, 2, 3, 4, 5, 8, 10, 11, 12, 13 & 14
9	Variable resistance load	All Items
10	Dual trace storage oscilloscope 20 MHz	Item no. 5, 6, 7, 8, 9, 10, 11, 12, 13 & 14
11	Distortion meter	Item no. 11, 12, 13 & 14
12	Solid state variable frequency source of AC Volt, 0-300V, frequency from 47.5Hz to 52.5Hz suitable for 7.5 KVA load	Item no. 12, 13 & 14
13	Secondary battery set	Item no.5, 6, 7, 8, 9, 10, 11, 13 & 14
14	Regulated power supply of different ranges and ratings	Item no.5, 6, 7, 8, 9, 10, 11, 13 & 14
15	Hand held True RMS digital Multimeter/ Average reading Multimeter	All Items
16	Psophometer	Item no.5, 8, 9, 13 & 14
17	Hour meter	All Items
18	Resistance box calibrated by Govt. /Reputed agency**	All Items
19	Insulation Resistance box calibrated by Govt. / reputed agency**	All Items
20	Dry and wet bulb thermometer.	All Items
21	Calibrator 5.5 digit or 6.5 digit **	All Items
22	Digital contact thermometer.	All Items
23	Clamp on meter.	All Items
24	Power Harmonic analyzer	Item no. 11, 12, 13 & 14
25	Digital micro meter	All Items
26	Digital Vernier calipers	All Items
27	Precision Multimeter with HV probe.	All Items
28	Data logger with thermo couple/ Multi-channel digital temperature recorder with thermo couple	All items
29	Computerised test bench taking input from digital multimeter	Item no. 13 & 14

** Note: Required for in-house calibration

- Note:**
- Outsourced firms shall have ISO approval and its QAP shall be duly verified by inspecting authority.
 - All the meters must be calibrated once a year by Government / Reputed agency. In-house calibration wherever feasible, may be done with specific permission of DIR/QA/S&T.
 - Laboratory area shall be air-conditioned.

Quality Assurance Flow Chart for Power Supply Equipment

