

**625C POWER PLANT
DC TO DC REGULATED
48-VOLT, 0- TO 600-AMPERE OUTPUT ON EACH OF TWO BUSES
140-VOLT INPUT
APPLICATION SPECIFICATION
EQUIPMENT DESIGN REQUIREMENTS
POWER SYSTEMS**

1. GENERAL

SCOPE

1.01 This specification, together with the supplementary information listed herein, describes the application requirements for the engineering, manufacture, and installation of the 625C power plant. This power plant combines two or more J86923A converter frames with a J86334C power distributing frame (PDF) in various 2-bus configurations. This power plant uses dc to dc converters rated at 50 amperes to provide -48 volt direct current, 0 to 600 amperes per bus, from a +140 volt central office battery power plant. This is a general purpose power plant that can be used in any system where the capacity and voltage range are suitable.

1.02 This specification is reissued:

- (a) to change the title to include application specification
- (b) to delete the equipment codes previously listed under **4. EQUIPMENT** because no equipment identified with those codes has been or will be manufactured.

CAPACITY AND SALIENT FEATURES

1.03 The J86923A converter frame used in the 625C power plant provides for parallel operation of multiple 50-ampere converters on a common bus. For each bus, the number of converters for any given load is equal to the minimum number of converters required to provide the desired output current

plus one additional converter. Thus, a standby converter is on line at all times. Each converter frame can hold up to seven converters, which provide a load capacity of 300 amperes.

1.04 A minimum power plant consists of two J86923A converter frames (each equipped with two converters) and one J86334C power distributing frame, which provide 0 to 50 amperes on each of two buses.

1.05 For increased output, additional converters can be provided in the initial J86923A converter frames to provide up to 300 amperes per bus. To further increase capacity, you can parallel up to two converter frames on a single bus. This maximum plant arrangement has four J86923A converter frames (each equipped with seven converters). These 28 converters provide a load current of up to 600 amperes per bus with one converter in each converter frame operating as a reserve. This reserve capacity is normally distributed over all of the converters in a frame, since they share the load current. If any converter fails, an alarm is issued, but the output to the load will not change.

1.06 The ordering list for applications that require a 2-bus power plant with distribution is shown on equipment drawing J86923A-(). The J86923 converter frame (Section 802-855-167) and the J86334 power distributing frame (Section 802-195-155) specifications describe their equipment design requirements.

1.07 The output cable requirements between the converter frame and the PDF are defined on SD-82565-01. These requirements, which are based

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on voltage drop limitations, determine the placement of the PDF with respect to the converter frame lineup. The preferred arrangement is to locate the PDF centrally between each single-bus lineup of converter frames.

DESCRIPTION

General Circuit Features

1.08 This converter plant is arranged with two independent 48-volt buses, each fed from one or two converter frames and a power distributing frame. Each converter frame can have from two to seven 50-ampere converters operating in parallel to supply up to 300 amperes. Thus, the capacity of the 2-bus plant can be configured in a range from 50 amperes to 600 amperes per bus in 50-ampere steps to meet initial and growth needs of the office.

1.09 The power plant bus voltage is adjustable over a range of 47 to 52 volts and has 1 percent regulation at the converter frame bus.

1.10 A high-voltage (55.0 ± 0.5 volts) shutdown circuit in each converter is selective. It both shuts down and disconnects from the bus the individual converter or converters responsible for the high-voltage condition.

1.11 Means are provided for functional, in-service testing of the power plant alarms, regulation, and shutdown features.

1.12 The converter frame output current is displayed on a panel ammeter. A panel voltmeter (located in the originating frame for each bus) indicates the bus voltage. Front panel tip jacks allow direct measurement of the output voltage and current of a converter frame.

1.13 The converter plant operates protection devices in the power distributing frame to clear both low- and high-resistance load faults without the loss of bus voltage or without excessive bus voltage dips. This is accomplished by means of a large, energy-storage capacitor bank connected to each bus located in the PDF and an output current boost feature in the converters.

1.14 An optional load-capacitor charging circuit is available in the power distributing frame.

1.15 Major alarms are issued for:

- (a) a load fuse operation
- (b) a bus voltage change of ± 4 percent
- (c) two or more active converter alarms in a frame
- (d) one or more active converter alarms with alarm upgrade function selected.

1.16 Minor alarms are issued for:

- (a) one active converter alarm in a frame
- (b) a capacitor fuse operation.

General Equipment Features

1.17 See Section 802-855-167 for the general equipment features of the J86923A converter frame and the 625C power plant. See Section 802-195-155 for a description of the J86334C power distributing frame.

1.18 The 625C power plant is designed to operate in an ambient temperature range of 0° to 50°C .

1.19 No wire or cable other than that included in the frames is furnished. Splice connectors for the 10-AWG, 140-volt converter frame input cables (14 per bay) must be furnished on a job basis. The 48-volt converter output is terminated on two bus bars at the top of the bays. Four KS-15977 L93, 4/0 crimp terminals are provided for this purpose. Control and alarm leads are terminated on a wire wrap terminal board located on the top rear of the converter frame and on the rear connector of the power distributing frame.

1.20 Load fuses are not furnished as part of this plant and must be ordered separately.

2. SUPPLEMENTARY INFORMATION

- 802-000-000—Numerical Index—Power Systems
- 800-020-001—Cross-Reference List—J, NJ, IS, and X Specifications to BSP Numbers
- 800-600-000—Checking List—General Equipment Requirements
- 032-110-701—Electrolytic Capacitors — Aluminum-Type—Requirements and Procedures
- 167-689-103—J86925 (620C) and J86926 (625C) Power Plant Description

167-689-104—Task-Oriented Practice 620C and 625C Power Plants

J87457—802-226-156—Converter, DC-To-DC, Regulated, ± 48 Volt 50-Ampere Output, +140 Volt Input

X-79728—Manufacturing Testing Requirements for the J86922A and J86923A Converter Frames of the 620C and 625C Power Plants

X-79729—Manufacturing Testing Requirements for the J87456A and J87457A DC-To-DC Converters of the 620C and 625C Power Plants

ED-97735-70—Electronic Control Office-Type Common Single-Bay Framework, 7-Foot 0-Inch High, 1-Foot 0-Inch Deep

ED-97785-()—Electronic Central Office-Type Common Method of Installing

SD-82553-01—DC-To-DC Converter, +140V Input, 24V or 48V, 50A Output, J87456A/J87457A

SD-82565-01—Discharge Circuit, 24V or 48V, 1200 Ampere, 620C and 625C Power Plants, J86925/J86926

KS-15977—Connectors (Terminal Lug and Splice Types)

Floor Plan Data

Power Data Book

Bell Telephone Laboratories, Incorporated

Dept 52423

3. DRAWINGS

To order WE J drawings, refer to the prefix and base number and request the current dash (-) number.

SD-82518-02—DC Power Distributing Frame J86334B and C

SD-82561-01—DC To DC Converter Frame, +140V Input, 24V or 48V, 300A Output, J86922A/J86923A

J86334C-()—DC Power Distributing Frame

J86923A-()—625C Converter Frame, DC-To-DC, Regulated, 48-Volt, 0- To 300-Ampere Output, +140 Volt Input

4. EQUIPMENT

J86334C—AT&T Co Std—DC Power Distributing Frame

J86923A—AT&T Co Std—625C Converter Frame, DC-To-DC, Regulated, 48-Volt, 0- To 300-Ampere Output, +140 Volt Input

5. GENERAL NOTES AND INDEXES

5.01 None.