

**620C CONVERTER FRAME  
DC-TO-DC REGULATED  
24-VOLT, 0- TO 300-AMPERE OUTPUT  
+140-VOLT INPUT  
EQUIPMENT DESIGN REQUIREMENTS  
POWER SYSTEMS**

**1. GENERAL**

**SCOPE**

1.01 This specification, together with the supplementary information listed herein, covers the equipment design requirements for the engineering, manufacture, and installation of the J86922A Converter Frame. This frame uses dc-to-dc converters rated at 50A to provide  $\pm 24$  volts dc, 0 to 300 amperes from a +140 volt central office battery power plant. This is a general purpose frame that can be used in any system where the capacity and voltage ranges are suitable.

1.02 This specification is reissued to:

- (a) Delete the reference to the ED-82960 spare parts list.
- (b) Revise the list structure in **4. EQUIPMENT**.

**CAPACITY AND SALIENT FEATURES**

1.03 The J86922A Converter Frame, used in the 620C Plant, provides for parallel operation of multiple 50-ampere converters on a common bus. In each frame, 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, extra converter capacity is on line at all times. The reserve capacity is normally distributed over all of the converters in a frame since they share the load current. If any one converter fails, an alarm is issued and that converter is disconnected from the common load bus, but the total output to the load will not change. Each converter frame can hold up 7 converters providing a useable load capacity of 300 amperes.

1.04 This specification does not include facilities for power distribution. Distribution for the J86922A Converter Frame is provided by J86334C Power Distributing Frame (Section 802-195-155) when combined in a J86925, 620C plant from which a variety of overcurrent protection equipment may be selected to fit application requirements.

1.05 Output cable requirements between the converter frame and the distributing frame are defined in SD-82565-01.

**DESCRIPTION**

**General Circuit Features**

1.06 The converter frame can be equipped with from two to seven 50A converters operating in parallel where 50A is always considered as spare capacity and the remaining capacity, up to 300A, is available for powering the load.

1.07 The plant bus voltage is adjustable over a range of 23 to 26 volts and has 1 percent load regulation at the converter frame bus.

1.08 The converters within a converter frame normally operate in an automatic load current sharing mode under control of a frame master voltage regulator. This avoids interactive balancing adjustments between converters when the plant load changes. Individual high (+2 percent) and low (-2 percent guard) voltage regulators in the converters back-up the master regulator function in the frame.

1.09 Individual converter frame circuit breakers are used as a manual and automatic disconnect/connect means between the plant bus and each converter's output.

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1.10 A high voltage shutdown ( $27.5 \pm 0.3V$ ) circuit in each converter is selective, which both shuts down and disconnects the individual converters responsible for the high voltage condition from the bus.

1.11 Functional, in-service testing of plant alarms, regulation, and shutdown features is provided.

1.12 The converter frame output current is displayed on a panel ammeter. An optional panel voltmeter indicates the bus voltage. Front panel tip jacks are also provided.

1.13 The converters can momentarily deliver up to 150 percent of the output current rating during an overload such as clearing a load fuse in an effort to maintain the bus voltage.

1.14 Major alarms are issued for:

- $\pm 4$  percent bus voltage change
- Two or more converter alarms in a frame
- One or more converter alarms with alarm upgrade.

Minor alarms are issued for:

- One converter alarm in frame
- Capacitor fuse operation.

1.15 An ON/STBY switch is provided to turn off the converter and open the circuit breaker associated with that converter.

1.16 A safety interlock feature automatically shuts down a converter and opens its output breaker if an attempt is made to remove a working unit from the frame.

#### General Equipment Features

1.17 The J86922A Converter Frame, Fig 1, uses a standard uniframe measuring 7 feet high, 26 inches wide and 12 inches deep. The top 13 inches contain the plant control printed wiring board, circuit breakers, meters and bus bars. The remaining portion of the frame provides space for a minimum of two and a maximum of seven J87456A converters.

1.18 Each frame is completely wired and equipped with converter hangers to accept seven converters regardless of the initial quantity ordered. The addition of 50 amperes capacity therefore only requires the installation of one converter and one circuit breaker.

1.19 Converter input power, control and alarm functions are provided through a single multiple pin connector located along the frame's right upright. One pair of output power cables, terminated with compression lugs, is provided for each converter along the left upright. All cables and converter hangers are covered by stile strips.

1.20 All switches, alarm indicators and adjustments for in service testing are located on the edge of the ED-82932 plant control and Alarm Circuit Pack (CP 1) and are directly accessible from the front of the equipment. Easy access is provided with the panel meter hinged door. (See Fig 2.)

1.21 The ammeter, optional voltmeter, voltage/current test jacks, and related fuses are located on the hinged panel and are directly accessible from the front of the equipment.

1.22 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 frame) must be furnished on a job basis. The 24-volt converter output is terminated on two bus bars at the top of the frame. Four output KS-15977 L93, 4/0 crimp terminals are provided to accept the output cables. Office alarm and scanpoint leads are terminated on a wire wrap terminal board located on the top rear of the converter frame.

## 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 Procedure  
 167-689-103—620C Power Plant Description  
 167-689-104—620C Power Plant Task-Oriented Practice  
 J86334—802-195-155—Power Distribution Frame  
 J86925—802-854-163—620C Power Plant DC-To-DC Regulated  $\pm 24 V$ , 0-600 Ampere Output on Each of Two Buses, +140V Input

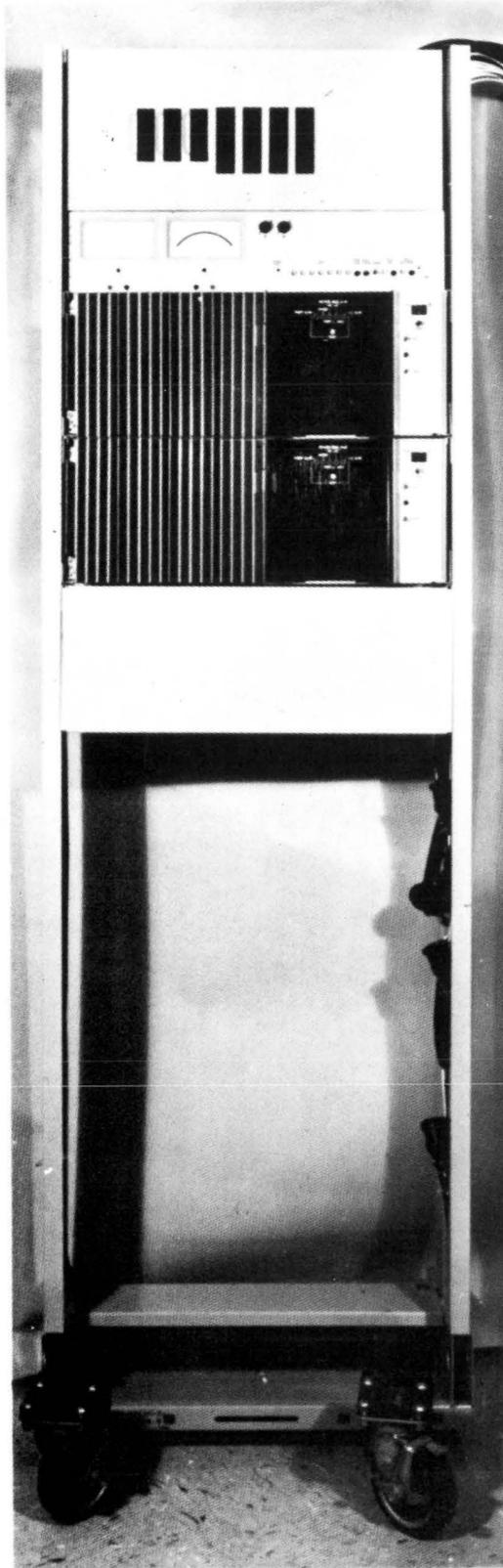


Fig 1—J86922A Converter Frame

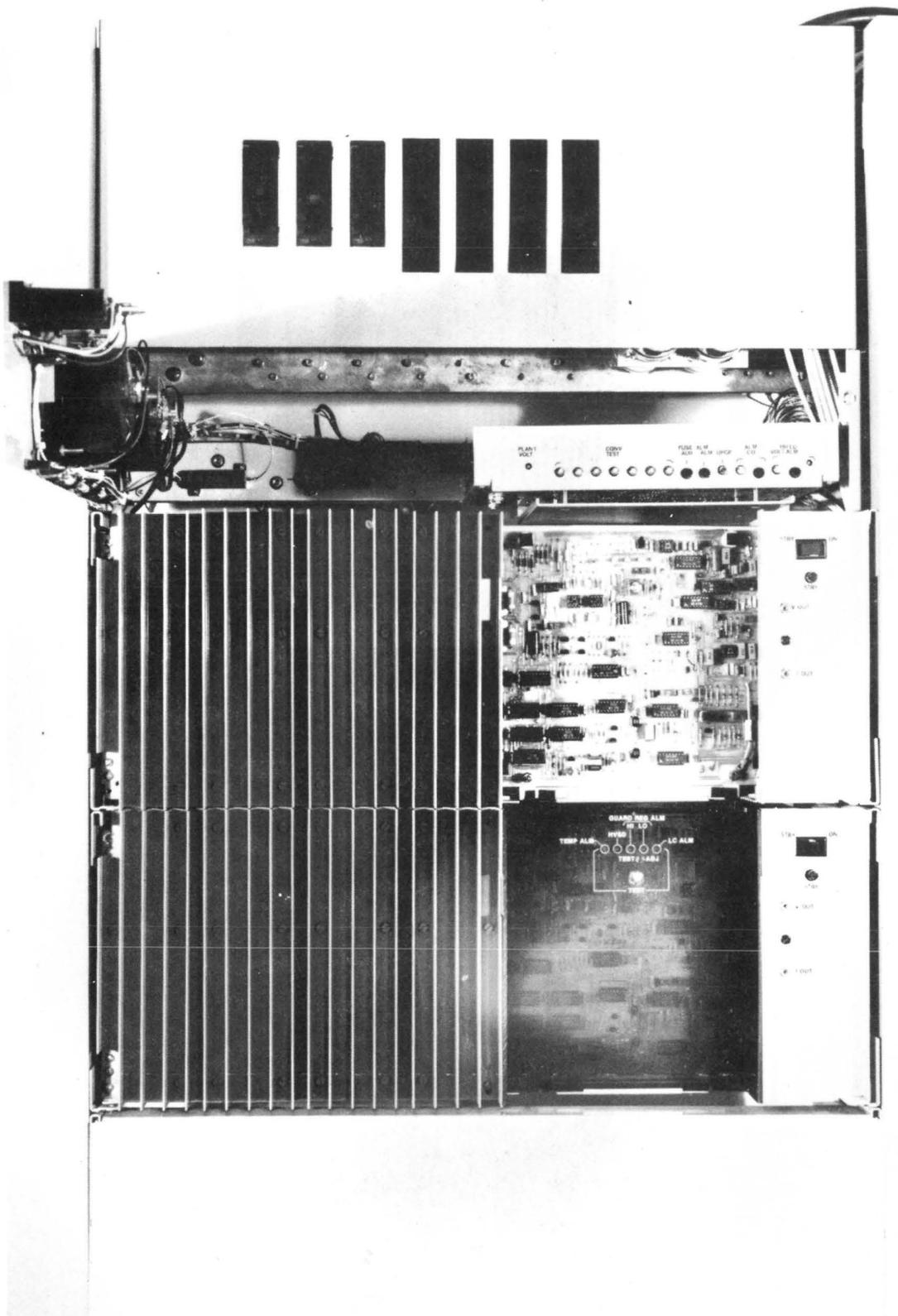


Fig 2—J86922A Converter Frame

J87456—802-223-159— Converter—DC-To-DC Regulated— $\pm 24$  Volt, 50 Ampere Output, +140 Volt Input

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

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

X-79728—Manufacturing Testing Requirements

SD-82518-01—DC Power Distributing Frame

SD-82553-01—DC-To-DC Converter, 140V Input 24V or 48V, 50 Ampere Output J87456A and J87457A

SD-82565-01—Discharge Circuit  $\pm 24$ V or  $-48$ V, 1200 Ampere Converter Plant 620C or 625C

Power Data Book

Floor Plan Data Book

### 3. DRAWINGS

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

ED-82932-( )—Converter Bay Control Circuit Pack (CP 1)

Bell Telephone Laboratories, Incorporated

Dept 52423

J86922A—620C Converter Frame—DC-To-DC Converters  $\pm 24$ V, 0-300 Ampere Output, +140V Input

SD-82561-01—DC-To-DC Converter Frame +140V Input  $\pm 24$ V or  $\pm 48$ V, 0 to 300 Ampere Output J86922A and J86924A

### 4. EQUIPMENT

*J86922A—620C Converter Frame — DC-To-DC Converters  $\pm 24$ V, 0-300 Ampere Output, +140V Input*

*List 1*—Framework, assembly, equipment and wiring for one frame equipped with two 24 volt, 50 ampere J87456A Converters and wired per SD-82561-01.

*List 2*—Equipment required in addition to list 1 for voltmeter.

*List 3*—Equipment required in addition to list 1 to add one 24 volt, 50 ampere J87456A Converter.

### 5. GENERAL NOTES AND INDEXES

None.