

System 922 Dual DS1 PFT Unit for T1 Robbed Bit and ISDN PRI Applications

The System 922 is a completely self-contained backup phone system that extends the concept of power failure transfer (PFT) to multiple DS1 T1 or ISDN PRI circuits. The System 922 goes to work automatically when normal operation of T1 RBS or ISDN-terminated customer-premise equipment (CPE) is inhibited due to a power failure, software problem, or hardware malfunction. When such a failure occurs the System 922 goes into the transfer mode, immediately taking control of the T1 or PRI circuits. Personnel at the site are then able to receive inbound calls and place outbound calls with minimal interruption.

The System 922 is connected between customer-premise equipment and the network connections. It combines the capabilities of multiple channel banks with integrated CSUs, an automatic call distributor (ACD), a 2-channel recorder/announcer, and a 48-station “micro” PBX. Note that the internal CSU’s functionality is provided for use by the System 922 only. It is not available for use by the CPE.

The main component of a System 922 is the Basic Configuration Unit which consists of either a wall-mounted or rack-mounted enclosure containing a CPU card, a dual DS1 interface card, a power supply card, and six “option” card slots. Depending on the requirements of the particular application, up to six 938A or 939 analog cards can be installed in the enclosure. Each 938A analog card provides eight ports that meet the technical requirements for Off-Premise Stations (OPS) including 20 Hz bridged ringing, disconnect signaling, and standard progress tones. The 938A analog card supports the connection of eight DTMF-dial analog telephones or loop start trunk ports of a key system. The 938A analog card can also support analog caller ID. The 939 analog card emulates eight FXS (subscriber) loop start circuits and can answer incoming analog calls and initiate outbound analog calls.

The System 922 can support both T1 Robbed Bit signaling and ISDN PRI signaling. When in the transfer mode for T1 Robbed Bit signaling, the System 922 provides communication for all 24 channels supplied by each of the network T1 circuits. The channels can be configured for any combination of inbound, outbound, or two-way (including two-way DID) signaling.

When in the transfer mode for ISDN PRI, the System 922 maintains D-channel synchronization and supervision, processing all call traffic “call-by-call” on each DS1 interface. Each of the 23 B channels of the PRI circuit are dynamically assigned and automatically



configured based upon the requirements of each call presented to System 922. When the System 922 is in the transfer mode, incoming calls can be directed to:

- Individual analog telephones, routed by the System 922 upon predefined DNIS table match-and-route instructions.
- Individual CO loop start trunks using the 939 analog card.
- Any of up to 32 ACD groups of analog phones, again routed by the System 922 based upon predefined DNIS table match-and-route instructions. Each of the ACD groups has adjustable parameters, including queue and overflow depth.
- Calls received by one analog telephone can easily be put on hold or transferred to another telephone using the standard switch-hook flash convention.
- Any of up to 48 pre-selected off-site telephone numbers, with or without an intermediate voice messaging. Routing of incoming calls by the System 922 to a particular off-site telephone number can be based on predefined DNIS table match-and-route instructions.
- A voice message, providing the caller with prerecorded information.

Whenever the System 922 is in control of the network circuits, on-site personnel can use the analog phones to make outgoing calls. They access the PSTN networks by dialing a one- or two-digit access code.

A flexible, menu-driven software configuration system allows support personnel, using VT100 terminal emulation, to customize the operation of their System 922. Configurable parameters are robust and include inbound call routing, outbound call access, security, and ACD operation. The menu system also provides a real-time view of the unit's operating status.

The System 922 is powered by -48 Vdc. In most applications, either the Gordon Kapes, Inc. Model 732A or Model 734A DC Power Supply with Battery Back-Up is recommended. Both power supplies are CUL Listed. As the System 922 uses low-power circuitry, extended operating time from the UPS can be expected. The System 922 is FCC registered.

Specifications

General

Dimensions (Overall):

13.9 inches high (35.3 cm)
13.5 inches wide (34.3 cm)
10.2 inches deep (25.9 cm)

Weight:

Basic Configuration Unit: 21.5 pounds (9.8 kg)
All Cards Installed: 25.0 pounds (11.4 kg)
Shipping Weight: 33.0 pounds (15.0 kg)

Mounting:

Wall Mounting: mounts to minimum 3/4-inch thick plywood backboard
Rack Mounting: mounts in a 19-inch rack assembly, uses eight rack spaces

Environment: 0 to 50 degrees C, humidity to 95% (no condensation)

Connectors:

2, 25-pair plugs, male (analog ports)
1, 25-pin D-subminiature connector, female (serial port)
4, 8-position non-keyed modular jacks for Network DS1 and CPE DS1
1, 3-position header (ground and DC power)
1, 8-position header (contact input/status output)

Power Requirements:

Voltage: -42.5 to -56 Vdc, filtered and regulated
Current: 1.2 amp maximum
Type: uninterruptible, even in the event of a commercial power failure
Connection: 3-position removable terminal block

Configuration Port:

Type: RS-232-C Data Communications Equipment (DCE)
Data Format: 8 data bits, no parity, 1 stop bit (8-N-1)
Data Rate: 9600 baud
Flow Control: XON/XOFF
Connector: 25-pin D-Subminiature, female

LED Indicators: 9

Indication: +8 VDC, -8 VDC, 87 VAC Active, Contact Input 1, Contact Input 2, CPE DS1 A Fail, CPE DS1 B Fail, Network DS1 A Status, Network DS1 B Status

Configuration Data Storage:

Type: 128 k bytes, super low power static RAM
Configuration Back-up Battery: 3 V, 150 mAh lithium battery, field replaceable
Memory Retention with No DC Power Present: 6 years cumulative, minimum

Contact Inputs: 2

Signal Compatibility: normally open (not shorted) or normally closed (shorted), contact closure referenced to ground

Signal Requirements: signals connected to the contact inputs must be capable of handling 5 mA at 10 Vdc

Connections: 2 pairs on 8-position removable terminal block

DS1 Status Relay Contacts: 2, normally open (not shorted)

Rating: 0.5 A maximum at 60 Vdc or 60 Vac (resistive)

Connections: two pairs on 8-position removable terminal block

Network DS1 Connections: 2, directly connects to RJ48C using an 8-position modular data cable (cable and 8-position modular jack included with System 922)

CPE DS1 Connections: 2, connects to CPE DS1 equipment using 8-position modular data cable to mate with 8-position modular jack (cable and jack included with System 922)

Network DS1 to CPE DS1 Transfer Method: metallic switching using sealed, bifurcated relay contacts

Regulatory Compliance:

Complies with Part 68, FCC Rules
FCC Registration Number: GIDUSA-18534-DE-N
Ringer Equivalence: not applicable
Required Connector: USOC RJ48C
Service Code: 6.0N
Facility Interface Code: 04DU9-B (D4 Framing), 04DU9-C (ESF Framing)

923 DS1 Interface Card

Installation: For use in System 922 enclosure only, one card maximum

DS1 Circuit Compatibility:

Designed for direct connection to DS1 circuits without requiring the use of an external channel service units (CSU). CSU circuitry is contained on the 923 Card and is intended only for System 922 use. CSU functionality is not provided to connected CPE DS1 equipment.

T1 Framing: ESF or D4 (superframe)

Zero Suppression: AMI, B8ZS, ZCS

Signaling Method: Robbed Bit, ISDN PRI

Robbed Bit Signaling Support: Ground Start FXS/FXO, SAS/SAO; Loop Start FXS/FXO, SAS/SAO; E&M Wink, Immediate

PRI Signaling Support: National ISDN-2, including AT&T 4ESS PRI (per TR41449, TR41459), AT&T 5ESS (5E6 and 5E7) PRI, Northern Telecom DMS100 and DMS250; 4ESS (NI-2); 5ESS (NI-2); 5ESS (NI-1); DMS100 (NI-2); DMS100 (NI-1), user side only

Layer 2 Protocol: per CCITT Q.921; LAP-D

Layer 3 Protocol: per CCITT Q.931

Transmitter:

Line Rate: 1.544 Mbps (external source)
Line Impedance: 100 ohms, resistive
Line Build Out: 0, -7.5, -15 dB, and -22 dB
Maximum Cable Drop: 6000 feet
Transmit Pulse Characteristics: meets the requirements of AT&T Communications Document TR 62411 (December 1990), ANSI T1.403-1989

Receiver:

Line Rate: 1.544 Mbps \pm 200 bps
Line Impedance: 100 ohms, resistive
Sensitivity: 0 to -30 dBm
Maximum Cable Length for Correct Performance: 6000 feet
Jitter Tolerance and Jitter Attenuation: meets the requirements of AT&T Communications Document TR 62411 (December 1990), ANSI T1.403-1989

CPE DS1 Carrier Loss Monitoring – DS1 A, DS1 B: circuitry watches for the presence of frame loss including yellow alarm

CPE DS1 Keep Alive – DS1 A, DS1 B: send framed ones, send blue alarm, send yellow alarm, send line loopback

924 CPU Card

Progress Tones Generated: industry-standard dial, reorder, busy, audible ring, vacant, and howler tones
Configuration Back-up Battery: 3 V, 150 mA lithium battery, field replaceable
Memory Retention with No DC Power Present: 6 years cumulative, minimum
Recorder/Announcer Channels: 2, each with 20-second (maximum) record/playback duration
Audio Recording Source: System 922 OPS telephone only
DTMF Receivers: 8 (serves as shared resource)
T1 Robbed Bit DNIS Type: DTMF only

Analog Cards

Depending upon the requirements of the application, up to six analog cards can be installed in a 922 enclosure.

938A OPS Card:

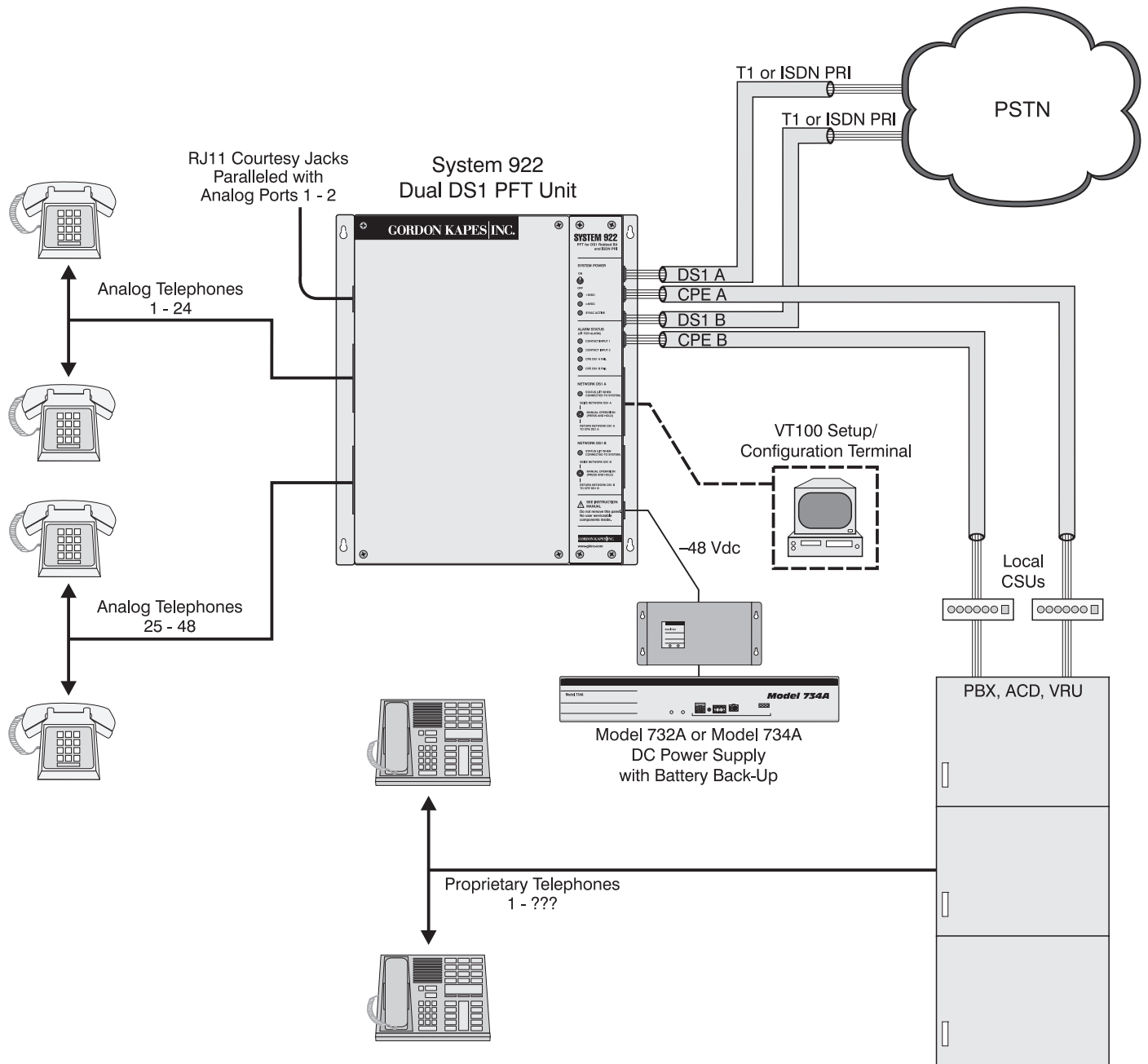
OPS Ports: 8, emulate PBX Class A FXO OPS circuits as defined in FCC Part 68
Loop Voltage: -48 Vdc
Loop Current: 25 mA (maximum)
Maximum Loop Resistance: 1520 ohms
Ring Voltage: 87 Vac, 20 Hz, sine wave
Ringer Load: REN 2 (maximum)
Disconnect Supervision: 1.5-second break in loop current
Switch Hook Flash Timing: 350 to 950 milliseconds
Dialing Type: DTMF only
Analog Caller ID Option: FSK Caller ID

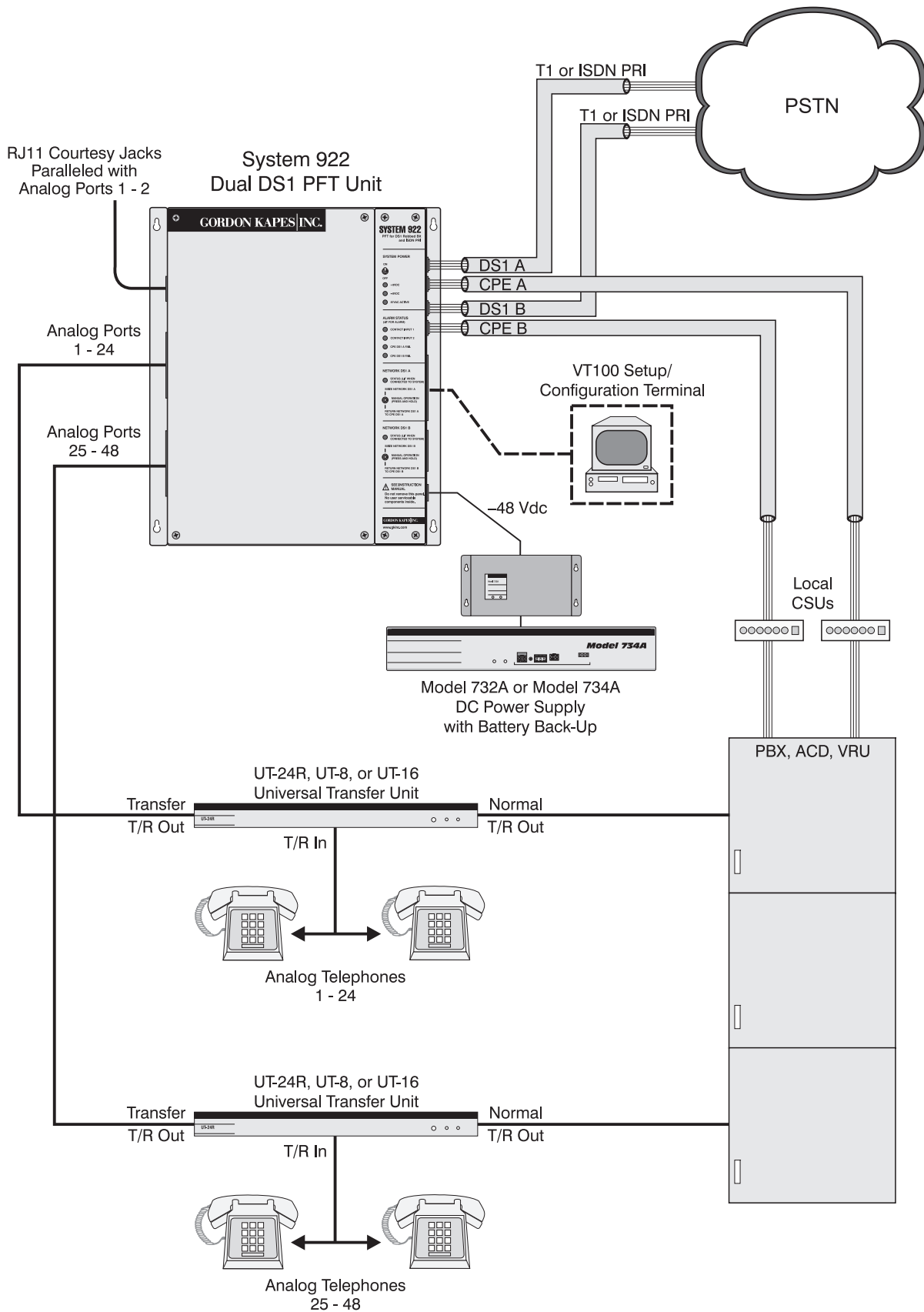
939 Analog Card:

Ports: 8, emulate FXS (subscriber) loop start circuits as defined in FCC Part 68
Actions: answer incoming analog calls, initiate outbound analog calls
Ring Trip: 1 to 9 rings, adjustable
Ringer Load: REN 2 (maximum)
Disconnect Supervision: 1.5-second break in loop current
Dialing Type: DTMF only

Specifications subject to change without notice.
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System 922 Typical System Installations





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