FDO 1000 Order-Wire (Packages*)

Fig. 1 - FDO 1000 Order-Wire Terminal with Adaptive PCM card interfaces 24 Kbit channel.

FDO 1000 Order-Wire Description

With DPS' FDO 1000 Order-Wire terminal, your analog or digital network can become your own private phone system, with links to the public telephone network. The order-wire is an economical party-line system that requires no central switching. An order-wire terminal and telephone are located at each facility in your network. The order-wire system is simple to operate and can significantly reduce your voice communications costs.

DTMF Selective Signaling

The DPS FDO Order-Wire uses the on-board microprocessor to synthesize and decode DTMF signaling tones. The FDO can be programmed for automatic privacy, manual privacy, no privacy and hoot-n-holler operating modes.

Digital Interface

The FDO 1000 order-wire can be equipped with an Adaptive PCM (ADPCM) digital interface card in the expansion card slot. This interfaces the order-wire to a 24 Kbit port on DPS' DVF-64 digital VF interface card.

LED Indicators

Front panel LEDs indicate order-wire off-hook, incoming call ringing and channel busy. Front panel test points and level controls are provided for calibration.

Addressing

The Order-Wire responds to one, two or three digit addressing. Leading zeroes in the address will set it for one or two digits. Rotary switches on the P.C. Board allow the address to be easily set. The station address is posted on the front panel with stick-on labels (labels are included).

Four-Wire Phone

Voice communications and out-dialing occur at a 4-wire telephone, mounted near the order-wire.

Change Notice
2-8-99: Added ADPCM LEDs info.
3-1-99: Converted to user manual, general corrections, clarified term./rptr. switch, added Table J.
5-17-99: Added center-fold, model chart and glossary.

Call Buzzer

A buzzer in the order-wire announces incoming calls. An optional buzzer can be installed in the phone.

External speaker

The FDO 1000 includes a 2-watt speaker amplifier that can be used to drive an external eight ohm speaker. A paging feature can be activated from any calling station to allow the desired party's name to be announced over the speaker.

Passive Bridge, Optional Active Bridge.

The FDO 1000 is facility-ready, with a built-in 4-Way passive bridge and level matching pads for +7 / -16 dBm channel levels. The bridge can also be bypassed for direct interface at the order-wire's active VF ports. An accessory active bridge can be installed on the order-wire's P.C. board for matching levels other than +7/-16 dBm.

Network Control

In privacy modes, the FDO 1000 uses automatically generated DTMF tones to control access to the order-wire

Table of Contents

* See Table J on page 24 for a listing of packages that use the FDO 1000 Order-Wire.

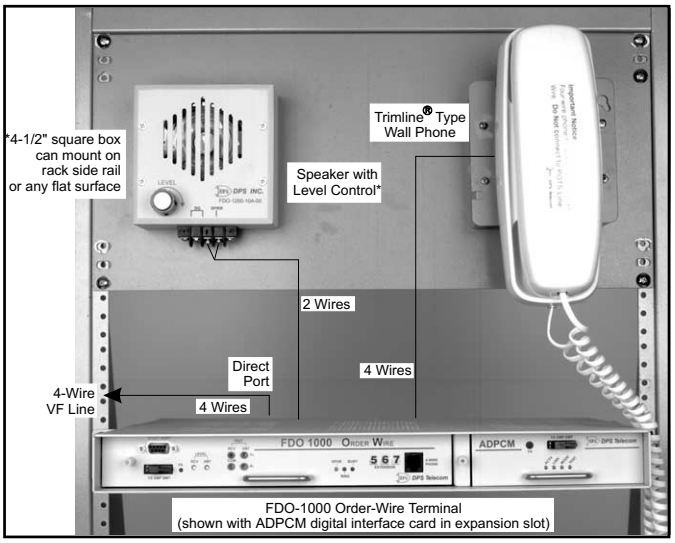


Fig. 2 - Order-wire packages include external speaker, phone, ADPCM and rack-mount housing.

network. An off-hook tone is generated when a caller picks up the phone, which causes other stations on the network to assume a busy state. If any other phone is picked up during the busy state, a busy signal will sound in the earpiece. Busied stations remain in that state until their station code is dialed from the caller's phone or until the caller hangs up, generating an on-hook tone.

Fig. 3 - Accessories for Order-Wire include active 4w/4w bridge, 4-wire DTMF phone and speaker.

Wire-Wrap and Connectorized Back Panel

All network, power and ancillary connections are made at wire-wrap blocks and connectors on the back panel. An RJ-12 jack is provided for the phone and screw-terminal barriers are provided for the power (office battery). voice input/output, bridge port connections, fuse alarm, external buzzer, speaker and M lead connections are all provided on a 60 pin wire-wrap block.

Adaptive PCM (ADPCM)

DPS' Adaptive PCM (ADPCM) provides a digital interface for voice frequency signals in the 300 to 4KHz bandwidth, particularly order-wire. It digitizes the voice to a 24 Kbit channel that is passed on to a DVF-64 card in

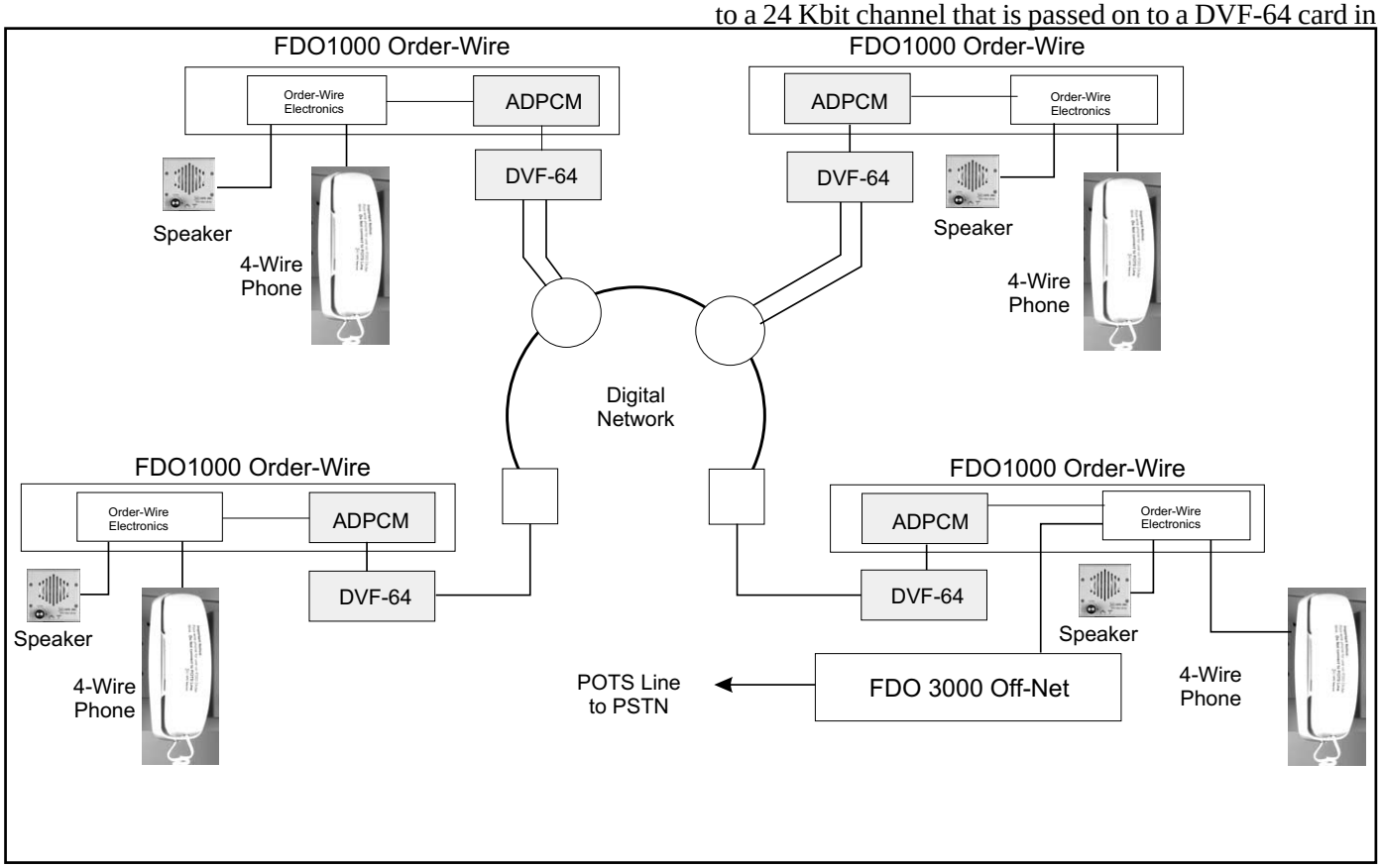


Fig. 4 - A typical analog order-wire network provides voice communications between telecom sites and to the Public Switched Telephone Network (PSTN) via a Plain-Old Telephone Service (POTS) line.

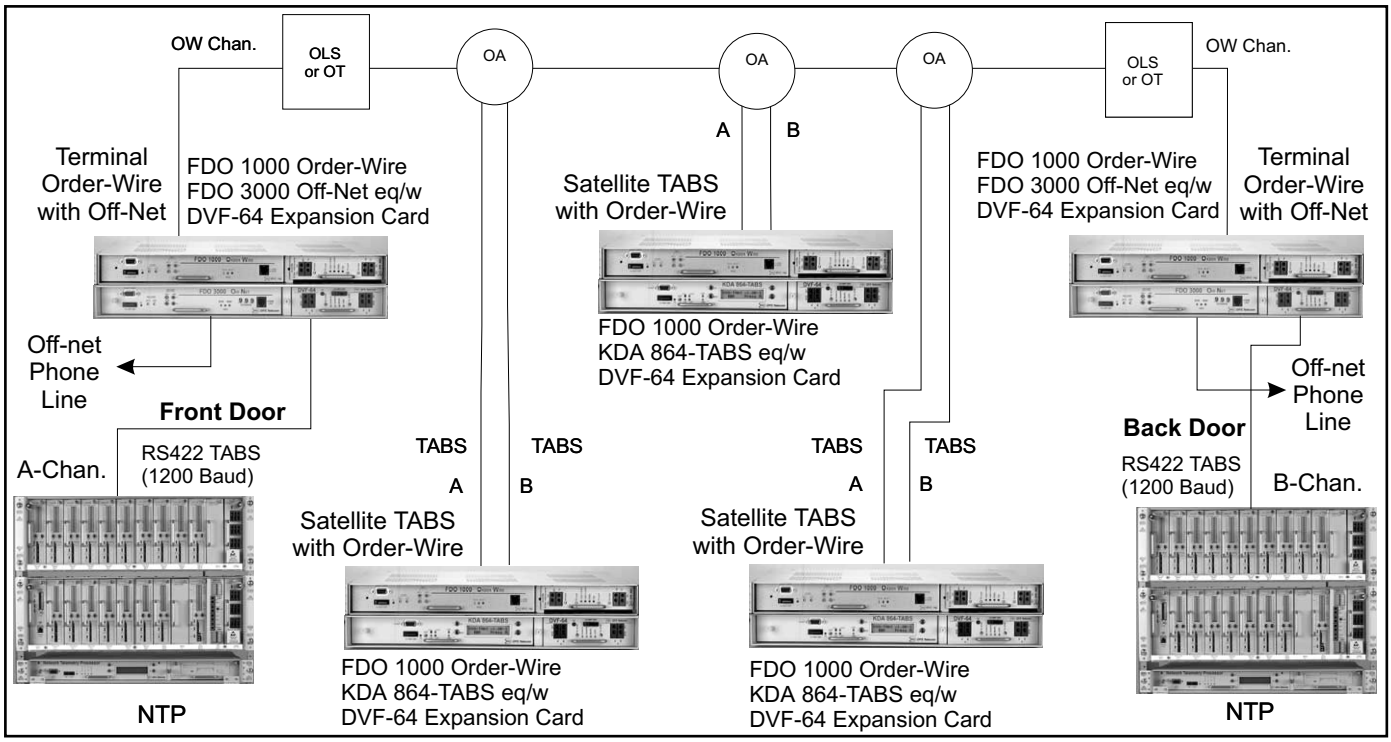


Fig. 5 - The ADPCM digitizes order-wire to put it on SONET.
NOTE: A more complete network diagram is shown in Fig. 20.

an adjacent housing. The DVF-64 assembles the 24 Kbit data with other signals and places it on the 64 Kbit overhead on a SONET or other digital network.

The ADPCM fits into the expansion card slot on the FDO 1000 Order-Wire.

Two separate circuits are included on the module, with a switchable bridging network that allows the two circuits to perform in a either a terminal or a repeater application. An FDO 3000 Off-Net can be connected to the second circuit to adapt the order-wire to a 2-wire POTS line in the Public Switched Telephone Network.

ADPCM Connectors

When the order-wire chassis is equipped for an ADPCM digital interface card, the back panel includes connectors for interfacing the DVF-64 card in a companion shelf. Access to the ADPCM order-wire ports is provided at the wire-wrap block.

Applications

The FDO 1000 is available in application packages that include KDA alarm network elements and the FDO 3000 Off-Net. Details on the currently available packages are provided later in this document.

DTMF Selective Signaling

Fig. 2 shows the basic components of the order-wire terminal.

Station call codes are programmed manually with rotary switches on the order-wire P.C. board. Number labels are provided to place on the front panel to indicate the setting.

Each site should be equipped with a 4-Wire DTMF phone and external speaker.

Wire-Wrap Jumpers

To utilize the order-wire's four-way bridge or the ADPCM, jumpers must be installed at the wire-wrap block. When the application details are known at the time an order is placed, these jumpers will be installed at the factory.

Order-Wire	**ADPCM**
KDA network element	**DVF-64**

Fig. 6 -Satellite KDA package w/Order-Wire.

Order-Wire Packages with the ADPCM

The FDO 1000 Order-Wire with ADPCM can be combined with a DPS KDA 864-E2A or KDA 864-TABS network element for alarm applications via SONET. The DVF-64 card resides in the expansion card slot of the KDA chassis. (Figs. 5, 6, 23 and 27)

The FDO 1000 Order-Wire with ADPCM can be combined with a DPS KDA housing with a blank module and

Order-Wire	**ADPCM**
Blank Module	**DVF-64**

Fig. 7 - Satellite Terminal package w/Order-Wire.

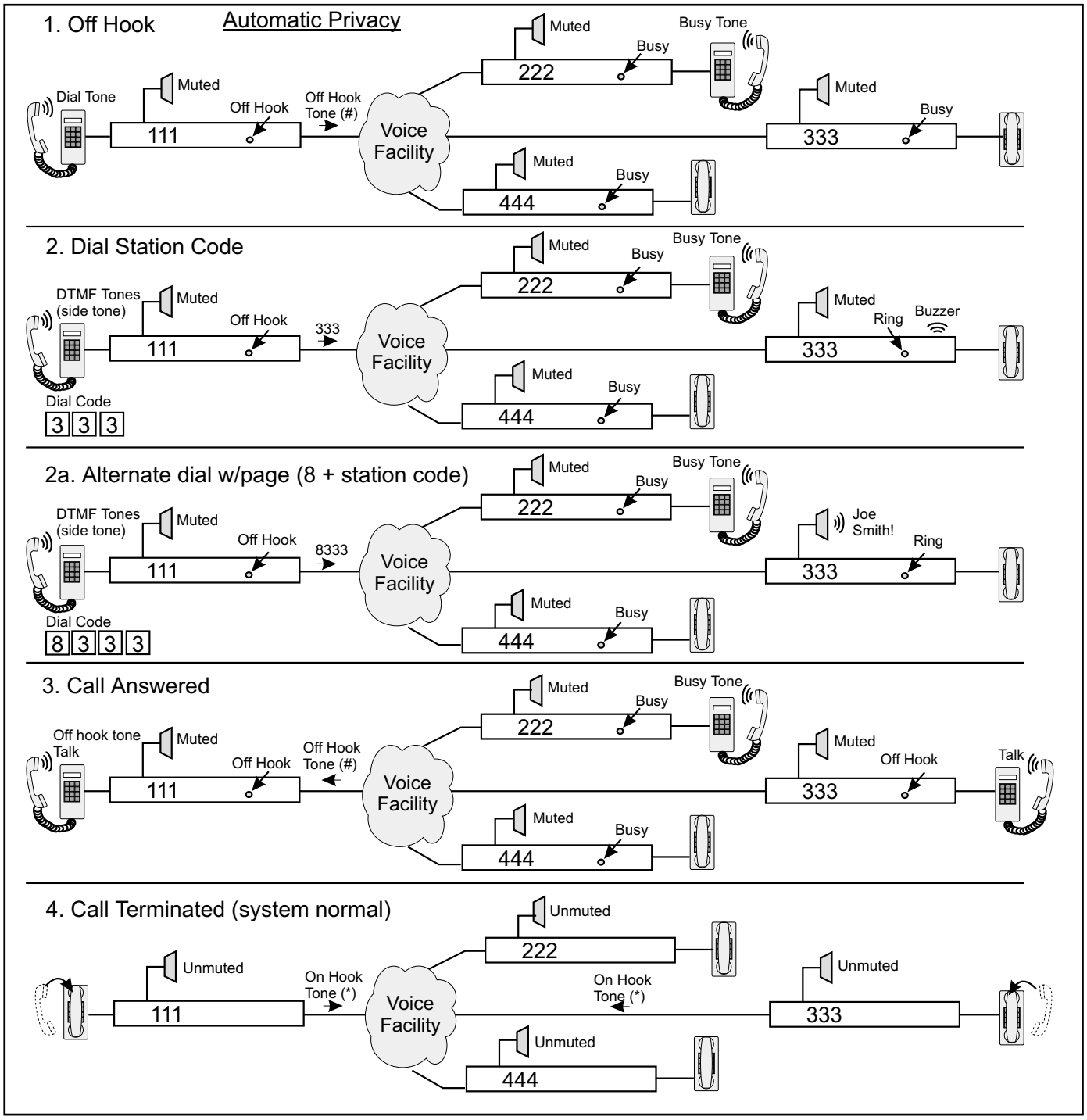


Fig. 9 - Order of operation in the automatic privacy mode.

a DVF-64 card to make a “satellite terminal” to provide voice and E2A/VF interface to SONET. (Figs. 7. and 25).

The FDO 1000 Order-Wire with ADPCM can be combined with an FDO 3000 Off-Net to make a "terminal order-wire with off-net" for interfacing voice and a PSTN

Order-Wire	**ADPCM**
Off-Net	**DVF-64**

Fig. 8 - Terminal Order-Wire With Off-Net package.

connection to SONET. The DVF-64 card fits in the expansion card slot of the off-net chassis. (Figs. 5, 8 and 22)

An expansion package is available to add an order-wire to a site with an existing KDA network element. (Fig. 25)

Operation Modes

Automatic Privacy

Refer to Fig. 9. In the automatic privacy mode the FDO order-wire performs like a normal private line telephone. The caller hears dial tone when the phone is first taken off hook and an “off-hook” tone is broadcast to busy out the network. When the caller dials the three-digit code for a

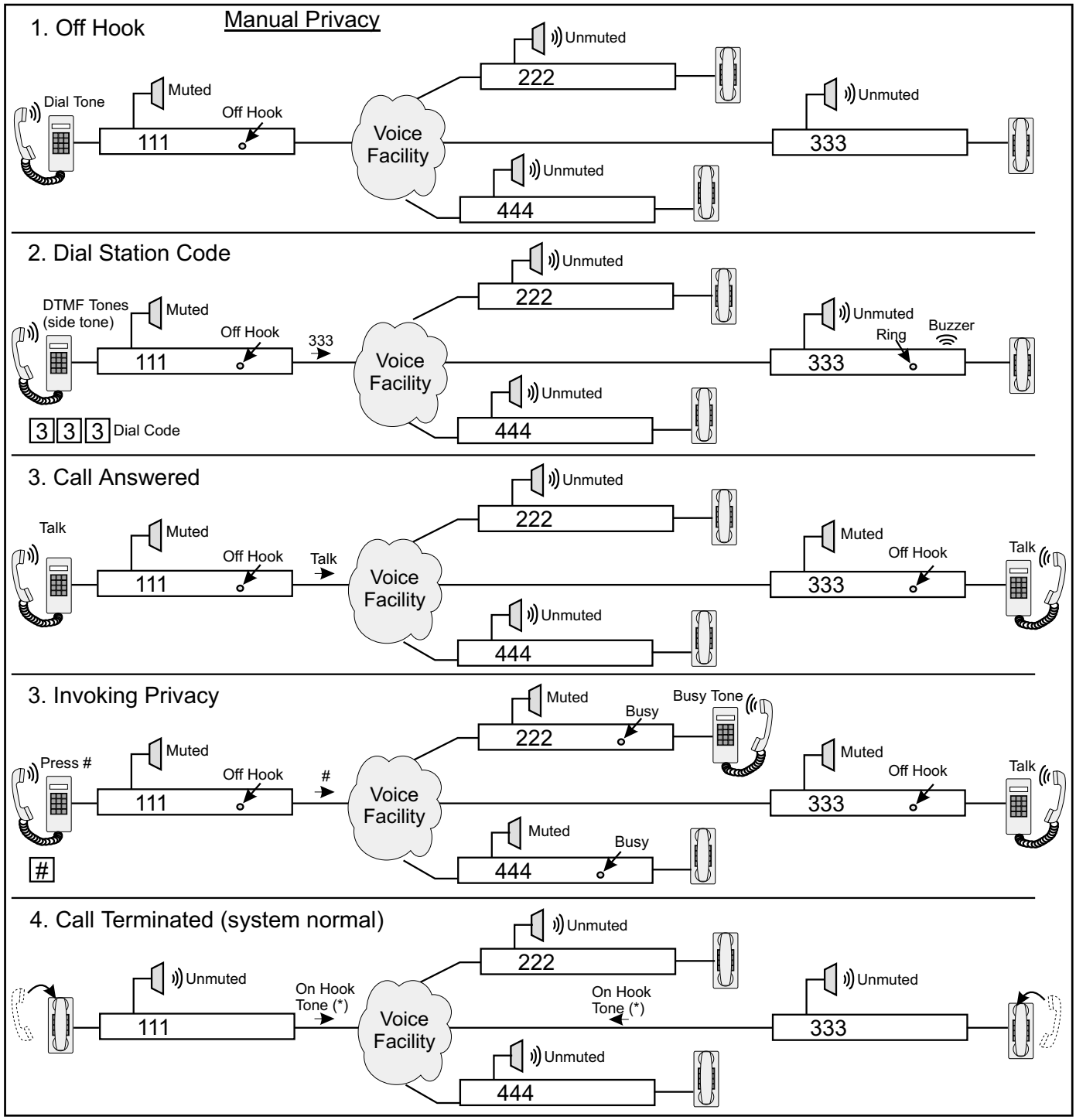


Fig. 10 - Order of operation in the manual privacy mode.

station, the buzzer at that station sounds and the caller hears a ring-back tone. When the called party answers, the ring-back and buzzer are silenced and conversation may proceed. During the conversation all other stations will hear a busy signal in the handset and all monitor speakers are muted. Either party hanging up generates an "on-hook" tone to clear the busy state.

In this mode the calling party may page the desired party over the called station's speaker by dialing "8" prior to entering the three-digit station code.

NOTE: Avoid using station codes starting with "8."

The busy state may be manually cleared by pressing the "*" button. It can be restored by pressing the "#" button. Other parties can be added to the conversation at any time.

An "all call" code rings all stations. Unanswered stations will time out in 90 seconds.

Manual Privacy

Refer to Fig. 10. The manual privacy mode works like the automatic privacy mode, except that the caller must press the "#" key to establish the busy state. It is released by dialing a "*" or by hanging up the phone.

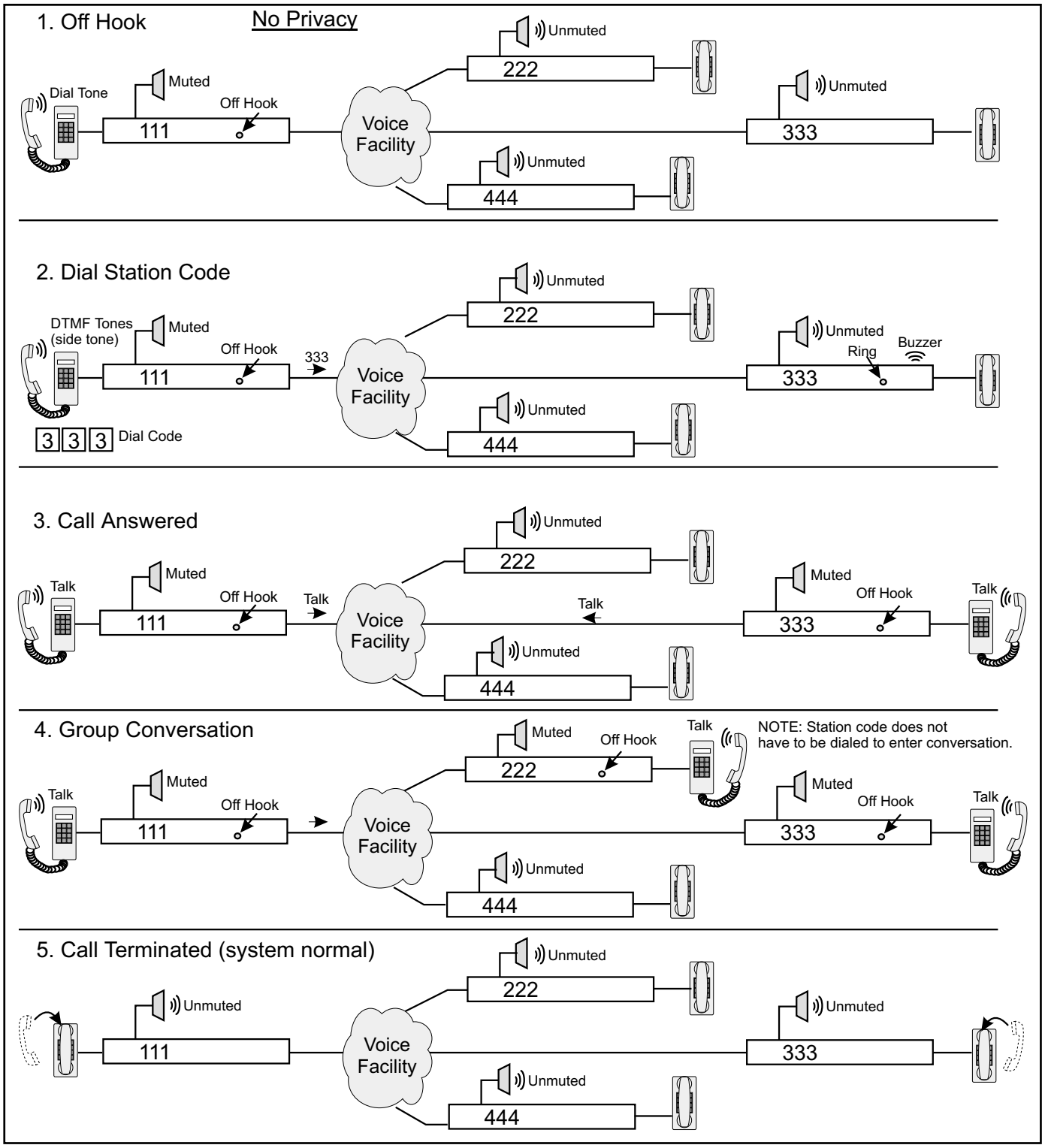


Fig. 11 - Order of operation in the no privacy mode.

No Privacy

Refer to Fig. 11. In the no privacy mode monitor speakers remain on when the system is in use and any station may get on the system at any time. A station's monitor speaker mutes only when the station phone is taken off hook.

Hoot-n-Holler

Refer to Fig. 12. A 4-wire telephone and an external speaker can turn the FDO 1000 into a classic "hoot-n-holler" order-wire. The speaker should be located where it can be heard by all parties at a facility. The phone is used to announce the desired party over the monitor speakers. When the person answers, the speaker is muted. All other sites continue to monitor the order-wire

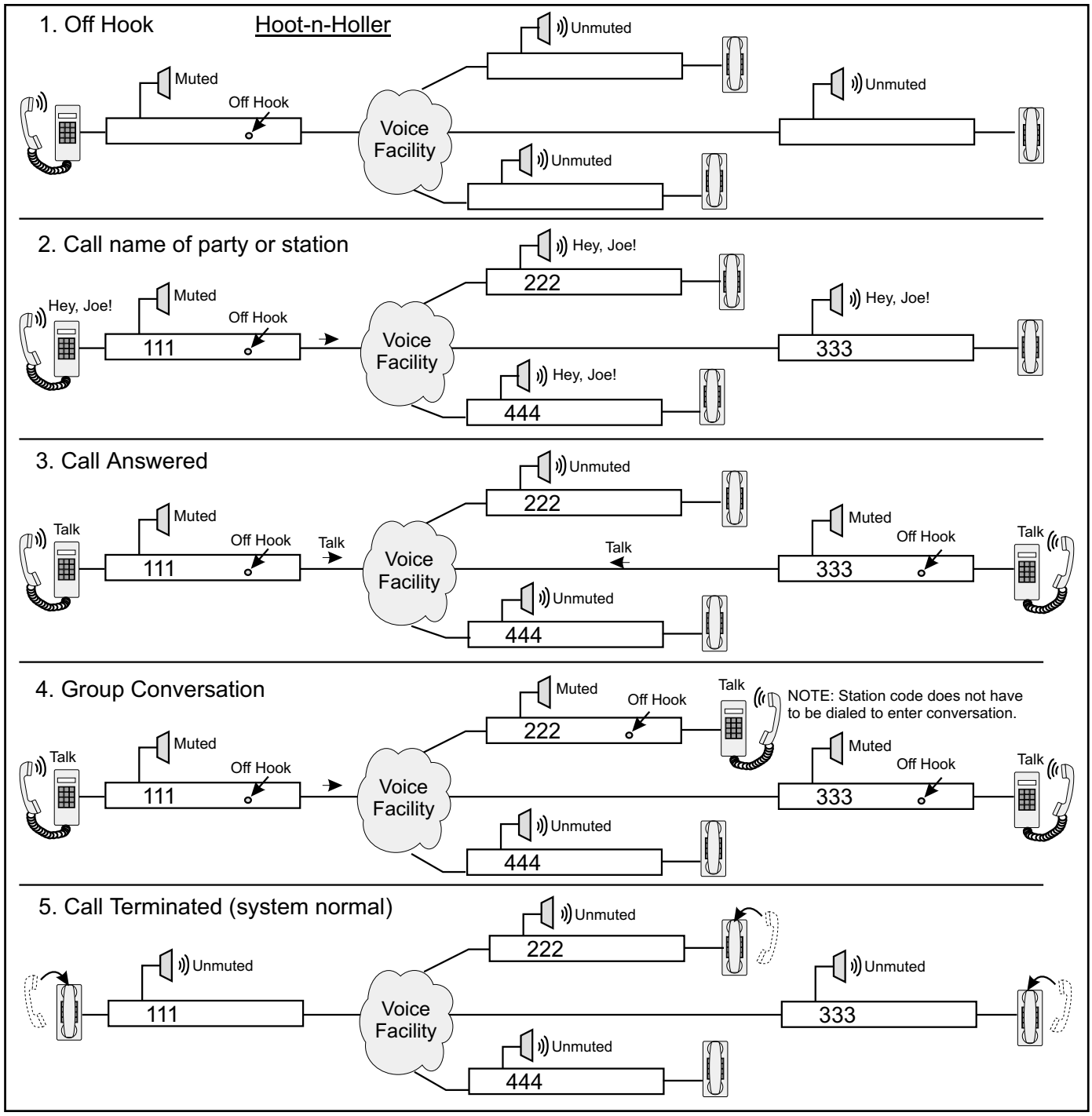


Fig. 12 - Order of operation in the hoot-n-holler mode.

channel over the speakers. This application can use the FDO-1301 phone and FDO-1200 speaker.

On/Off Hook Function

The factory default uses # and * tones for controlling privacy functions. In cases where these tones are already in use for other functions, switch SW5.3 can be set ON to change control to the fourth column "A" and "C" tones. (The fourth column buttons are not provided on the phone, so manual privacy will not work if SW5.3 is ON.)

Off-Net Function

When an FDO 3000 Off-Net is used in the order-wire network, the automatic privacy mode should be used for best control of off-net access. In the other modes there is limited control. With manual privacy, you must press # to lock out an outside call and * to disconnect an outside caller. (*NOTE: If an outside caller presses *, the call will be terminated.*) With no privacy and hoot-n-holler modes, an outside call can interrupt an on-going conversation and there is no way to force a disconnect.

Shipping List

- FDO 1000 Order Wire card
- Shelf
- Mounting Hardware
- Fuses
- Operation Guide
- Telephone
- Speaker
- ADPCM Card
- Interconnecting cables

Installation

1. Unpack the order-wire and all accessories.
2. Install mounting ears for 23" or 19" rack. Position as required per Fig. 13.

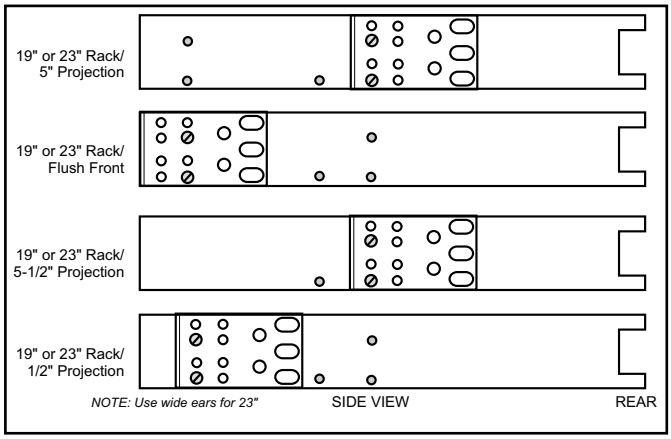


Fig. 13 - Position mounting ears for desired projection.

3. Mount the order-wire terminal in a rack.
4. If a speaker is included, mount the external speaker and connect to wire wrap block C1 per Fig. 14.
5. If a phone is included, mount the phone per Fig. 15. Connect to RJ-12 jack on the back of the order-wire.
5. Make sure the fuse is removed from the front panels of both the order-wire and the ADPCM.
6. Remove P.C. board from housing.
7. Connect all inputs and outputs per Fig. 16.
8. If passive bridge is used, connect jumpers at C1 on the rear of the chassis per Fig. 16.
NOTE: If the application was known at the time of the order, these jumpers will be factory installed.
9. Connect power per Fig. 16.
10. Set station number on rotary switches per Fig. 17. Use leading zeroes to set for 1 or 2 digit coding. Refer to Table A for code assignments.

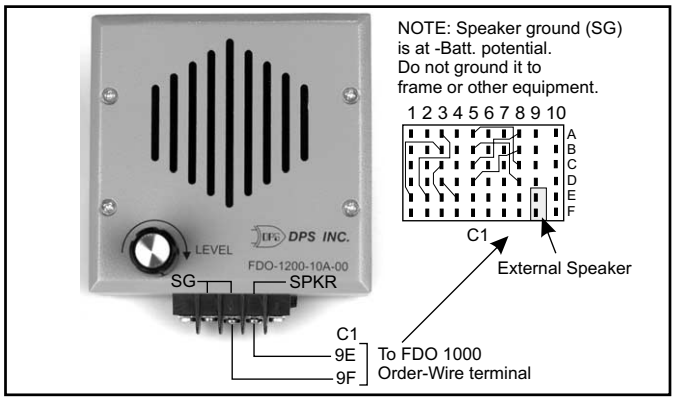


Fig. 14 - Connecting the FDO 1200 Speaker.

11. Apply station code numbers to front panel per Fig. 17.
12. Set DIP switch for operating mode per Fig. 17. (**Factory default is "automatic privacy."**)
13. Set speaker trim pot per Fig. 17.
14. Re-install P.C. board in housing.
15. Remove ADPCM card from shelf.
16. Check switch settings per Fig. 28. (**Factory default is "mid-point repeater."**)
17. Re-install ADPCM card in housing.
18. Insert fuses at order-wire and ADPCM front panels.
19. Go to Test and Acceptance on page 18.
20. Installation is complete.

Table A - Dial Code Assignments

Code	Assignment
000 thru 009*	Single digit dialing. Leading zeroes are not dialed.
010 thru 099*	Two digit dialing. Leading zero is not dialed.
100 thru 799; 900 thru 999*	Three digit dialing.
777	All call
8 + three digit code	Page at a station. Not functional with all call.

*** Avoid using codes that start with "8."**

Reference Figures

Fig. 19 illustrates the shelf wiring diagram.

Figs. 22 - 27 show the details of the various order-wire packages offered.

A. Install duplex adaptor plate on quad box opening. (Skip if a duplex box is already in place.)

B. Use the provided mounting studs and screws to install the phone mounting plate on duplex opening.

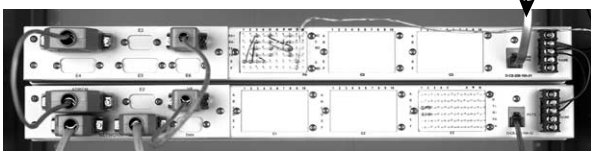
C. Connect cable to back of phone. Feed cable through opening in mounting plate and thread through duplex or quad box to back of order-wire. Install phone base on studs projecting from mounting plate. Push base down to secure.

D. Remove directory card from phone and reverse the handset tab. (Refer to Lucent user's manual for details.) Replace directory card.

E. Connect handset cord* and place handset on base.

NOTE: This phone has been converted to 4-wire. Do not connect it to a POTS line.

F. Connect phone cable to back of order-wire.



* Select either the standard cord provided with the phone or the optional 25 foot accessory cord.

Fig. 15 - Install 4-wire phone on duplex plate near the order-wire.

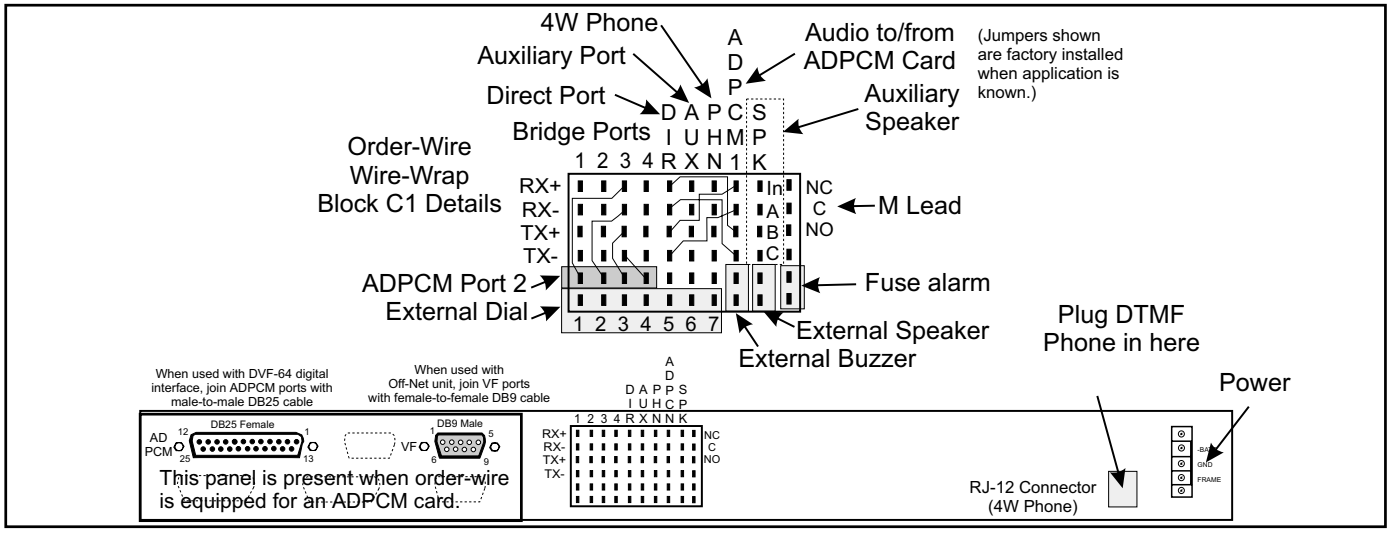


Fig. 16 - Order-wire interfaces network on wire-wrap pins at the rear of the housing.

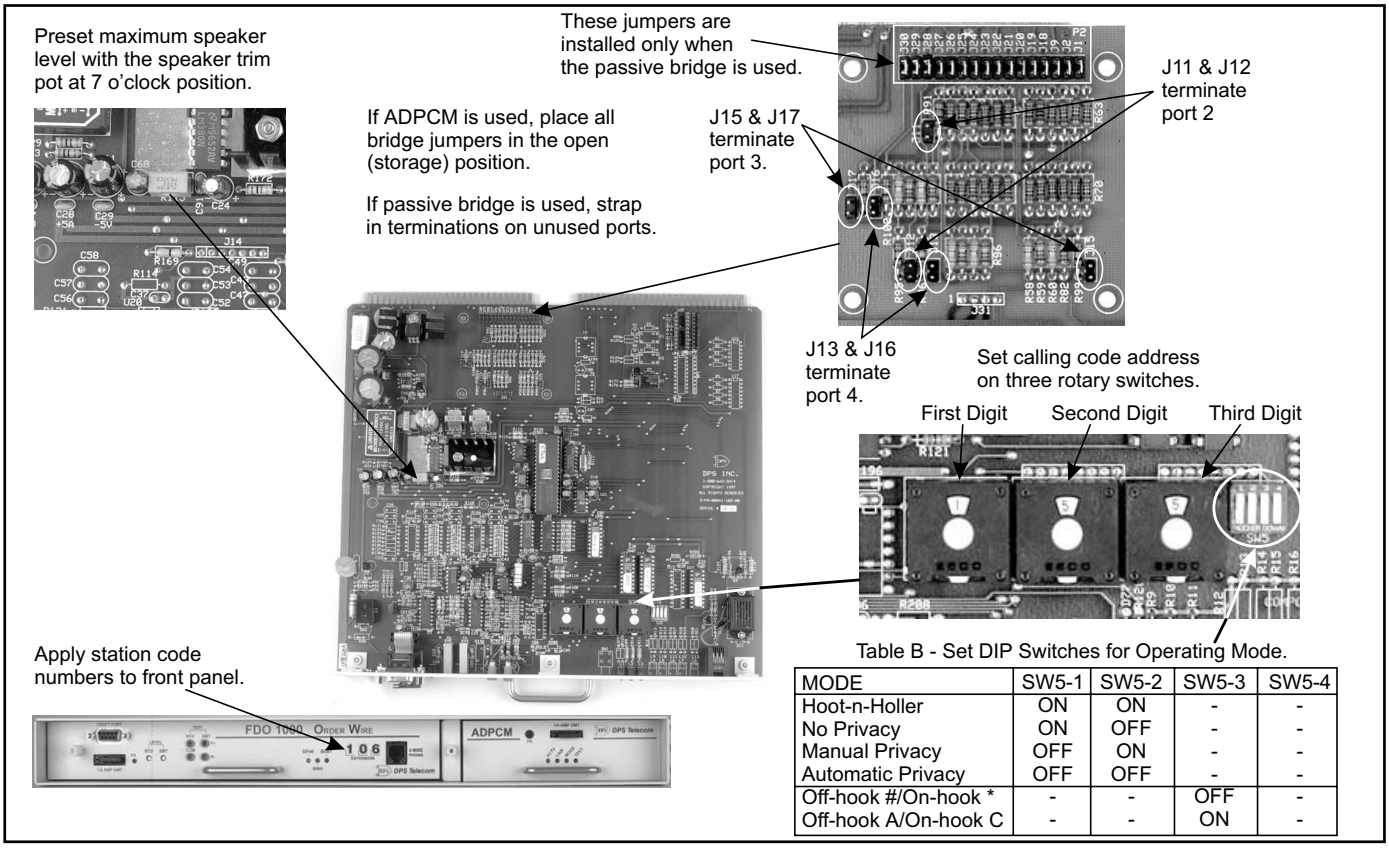


Table B - Set DIP Switches for Operating Mode.

MODE	SW5-1	SW5-2	SW5-3	SW5-4
Hoot-n-Holler	ON	ON	-	-
No Privacy	ON	OFF	-	-
Manual Privacy	OFF	ON	-	-
Automatic Privacy	OFF	OFF	-	-
Off-hook #/On-hook *	-	-	OFF	-
Off-hook A/On-hook C	-	-	ON	-

Fig. 17 - Set order-wire options before applying power.

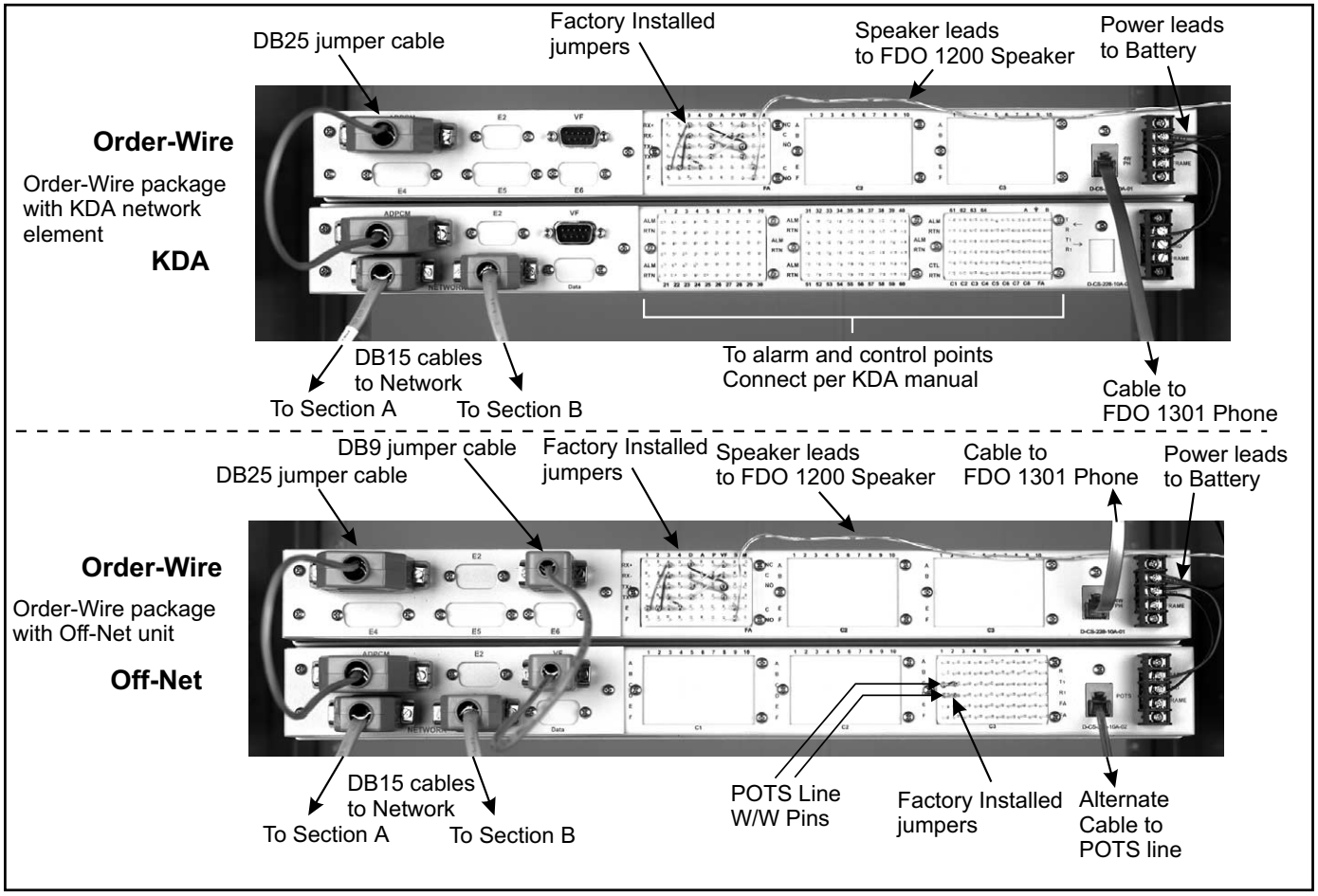


Fig. 18 - When installing an order-wire package, connect inter-shelf cables.

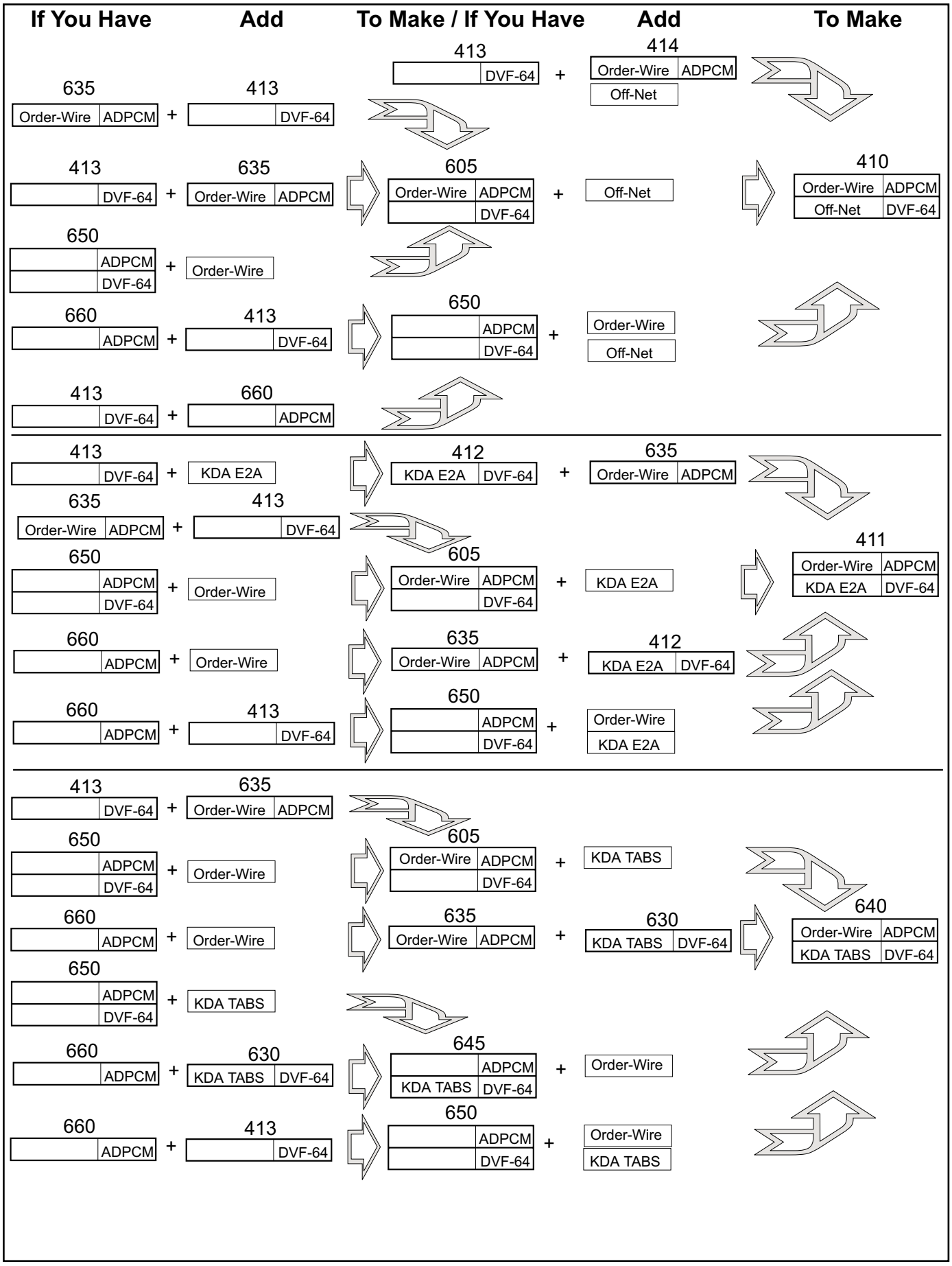
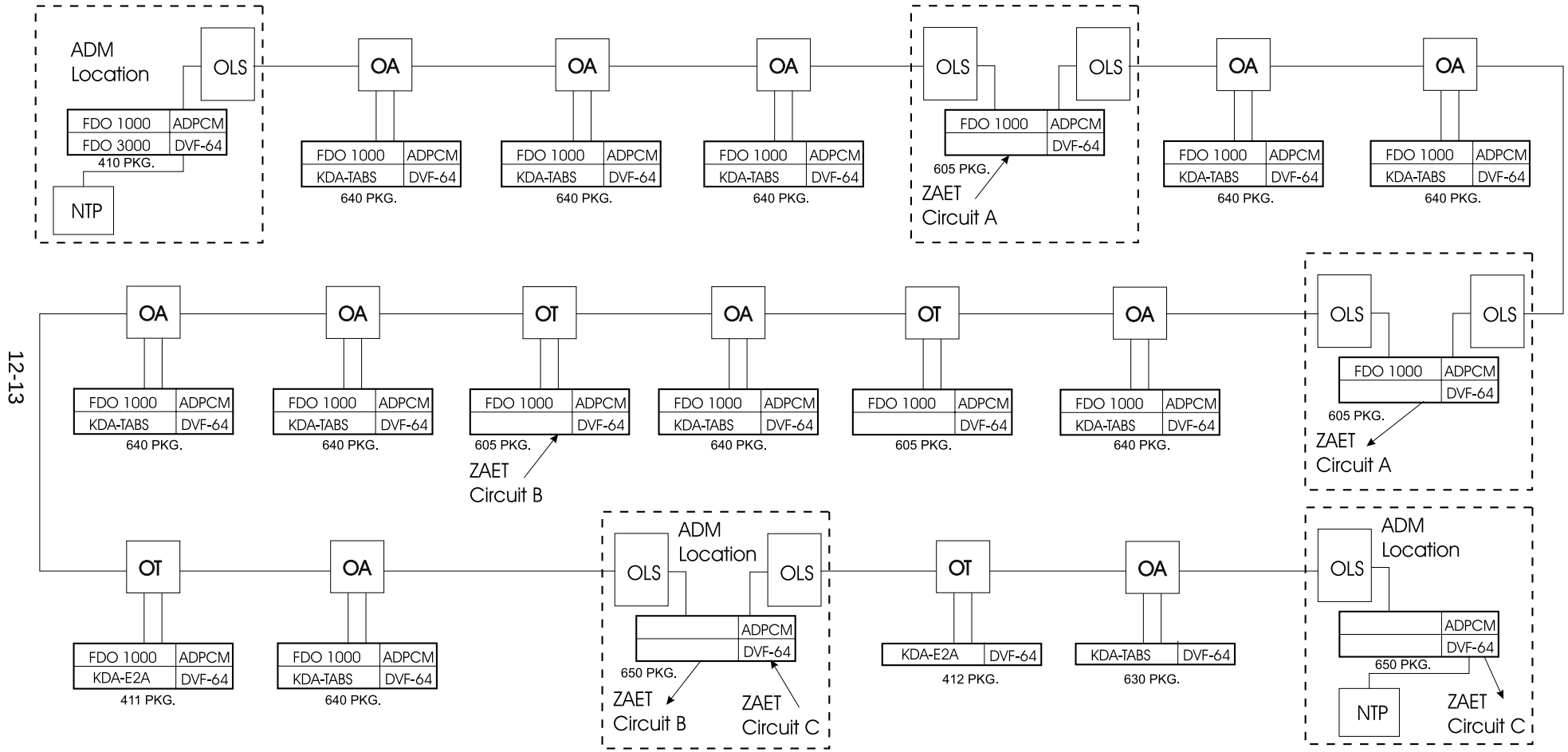


Fig. 19 - Packages can be expanded to make other packages.


ADM
Location
OLS
FDO 1000
ADPCM
FDO 3000
DVF-64
410 PKG.
NTP
OA
FDO 1000
ADPCM
KDA-TABS
DVF-64
640 PKG.
OLS
FDO 1000
ADPCM
DVF-64
605 PKG.
ZAET
Circuit A
OT
FDO 1000
ADPCM
KDA-TABS
DVF-64
605 PKG.
ZAET
Circuit B
KDA-E2A
DVF-64
411 PKG.
412 PKG.
KDA-TABS
DVF-64
630 PKG.
650 PKG.
ZAET
Circuit B
ZAET
Circuit C
NTP

Glossary of Order-Wire and Alarm Remote Terms

ACO - Alarm cut off. Switch to silence an audible alarm. When the ACO is "on," the audible alarm device is silenced.

Alarm Point - A single discrete alarm input that requires a discrete (usually on-to-off or off-to-on) change in current flow or voltage to indicate a change of alarm condition from normal to alarm state. Assigned to a point number in a display and address. Usually reported to master as a single bit in a data stream.

Battery - Facility DC power. Normally supplied from a battery plant inside the office. Polarity is normally negative (positive ground) in a telecom facility.

Baud - The data transmission rate that the Com Port uses to talk to the equipment. Common data rates include: 1200, 2400, 4800, 9600, 19200 (19) and 38400 (38).

Change Of State - This is the condition of a point when it is in transition from one state to another. Change of State is abbreviated as COS.

Control Point - Relay isolated output that is controlled by command from the master. Normally-open (SPST) dry contacts are commonly used.

COS - This is the abbreviation for Change Of State.

Craft Port - Serial port for connection of a computer or ASCII terminal to test and modify configuration of the remote.

Database - A file containing records of organized and related information.

Displays - Displays contain 64 points of data.

Download - The act of transferring a configuration file from a computer to the KDA. Can be done remotely via the dial port (modem), if equipped, or locally via the craft port.

DTMF - The abbreviation for Dual Tone Multi-Frequency. This is a common touch tone telephone.

Expansion Card - Accessory card that fits into a slot at the right side of the KDA chassis. Adds additional functions to the host unit, such as the ADPCM and DVF-64 cards.

FDO - Model designation for DPS Telecom's order-wire product line. All products with this prefix are used with the order-wire.

KDA - Model designation for DPS Telecom's alarm remote / network element product line. All products with this prefix are alarm remotes.

LED - The abbreviation for Light Emitting Diode. The LED is used as an indicator of activity.

Modem - The abbreviation for Modulator/Demodulator. Modems are used to transfer data over telephone lines.

Off-net - A connection point in the order-wire network for the public switched telephone network (PSTN). Allows order-wire stations to have access for global communications.

Optically Isolated - Electrical interface, such as a discrete alarm point input, that isolates the external circuitry from the internal circuitry of the KDA with an optical coupler. Optical Isolation reduces the possibility of electrical mis-match or interference between the KDA and the alarm sources.

Order-Wire - Voice communications device for maintenance personnel. Often includes data for alarms and network management. Other terms are service channel and supervisory.

Polarity - The polarity of a point can be either Normal (NRM) or Reverse (RVS). Normal polarity is current flow in a closed circuit for an alarm.

POTS - Plain Old Telephone Service. A 2-wire phone line to a central office switch.

RTU - Remote Telemetry Unit. An RTU is a device that gathers alarm inputs and communicates them to a master alarm station.

Satellite - Additional KDA units at the same location and communicating with the master through a "base" KDA. Up to three satellites can be associated with a base KDA. Using satellites expands the use of a remote address, allowing greater system capacity.

TBOS - Telemetry-Byte-Oriented-Serial protocol. A well-established alarm system protocol used by many telco-oriented manufacturers. Normally embedded in switches, channel banks and other equipment with many alarm points. TBOS normally uses an RS422 serial port. A port has a capacity of 512 alarm points, divided into 8 "displays" of 64 points each.

Traffic - Activity on the line or channel.

Wire-Wrap - Wire connection points using a steel post that the connecting wire is wrapped around using a special tool.

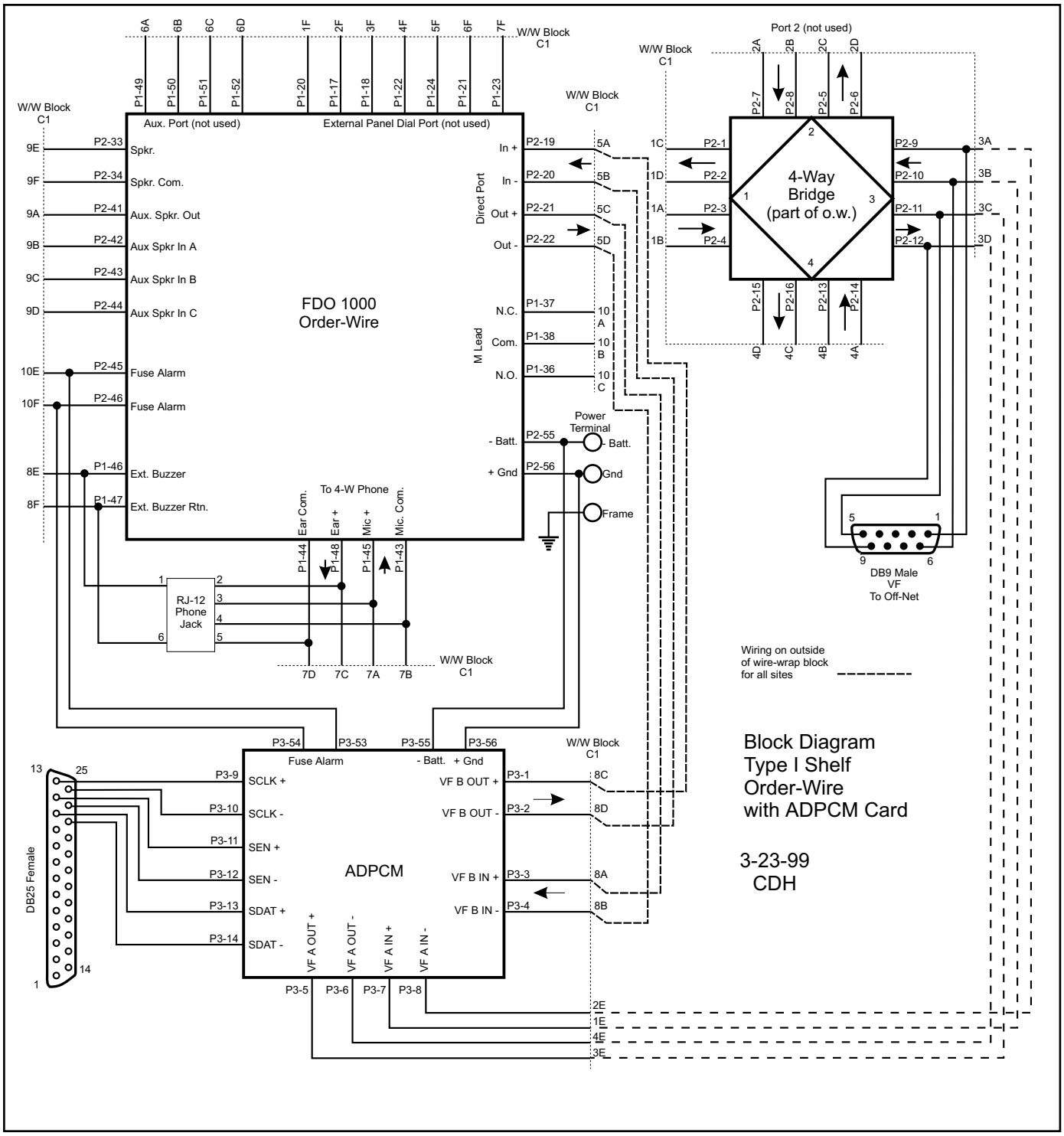
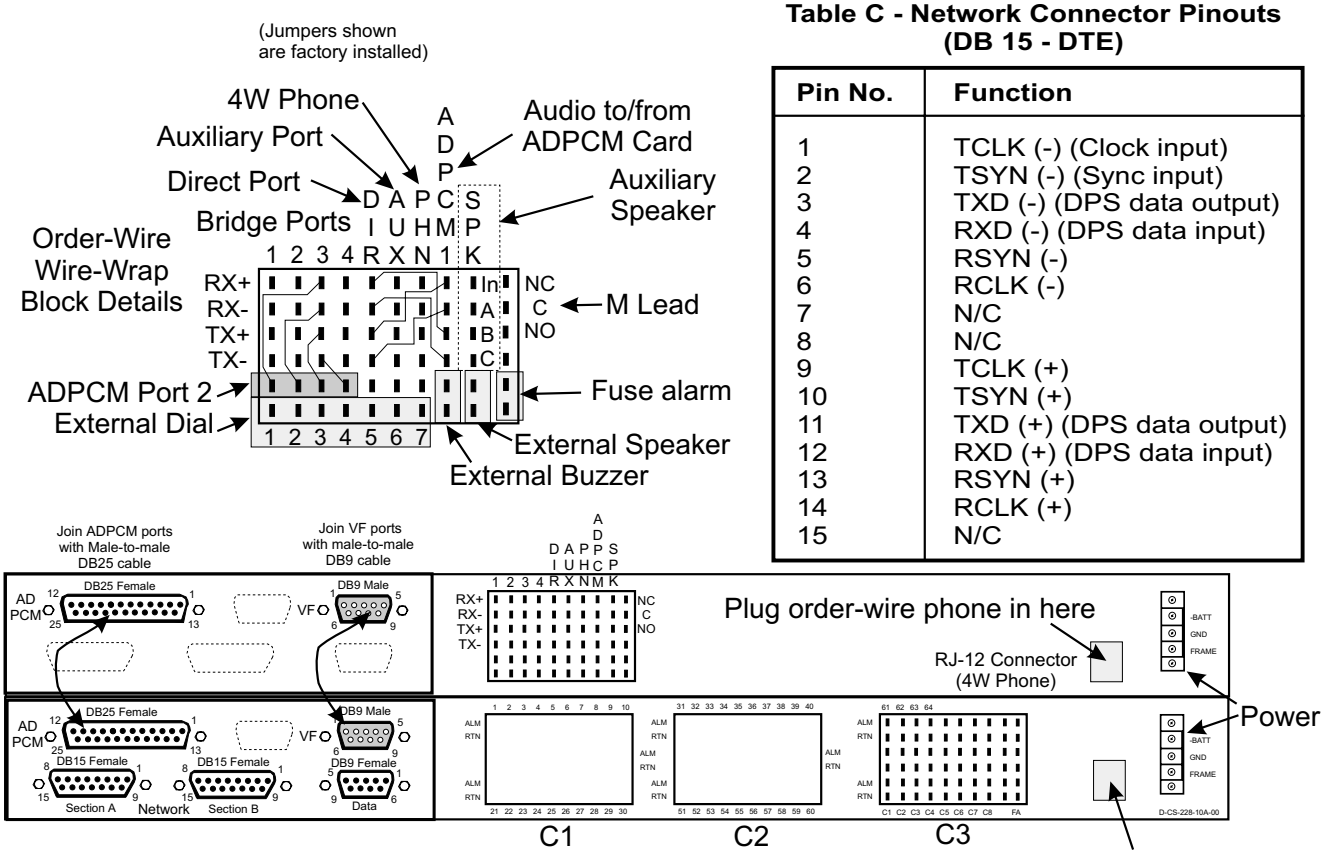
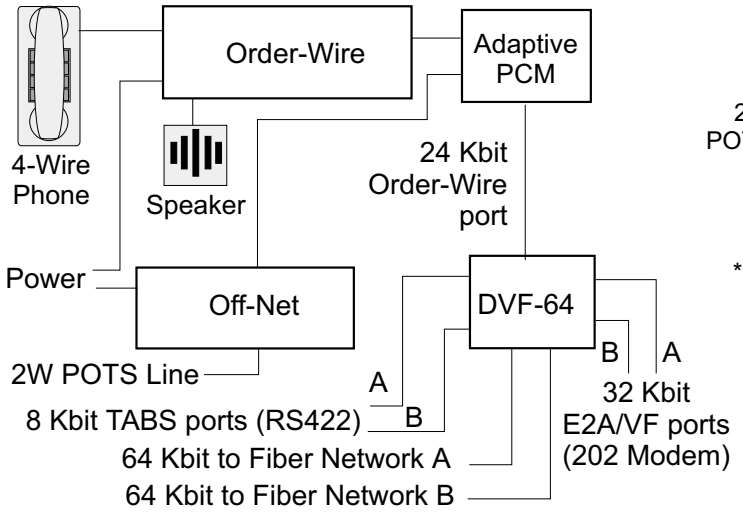


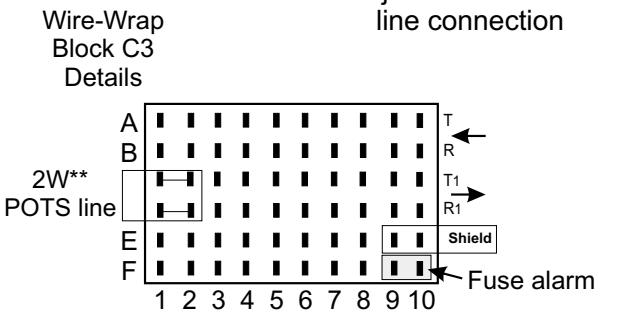
Fig. 21 - Order-wire package is pre-wired for digital application.

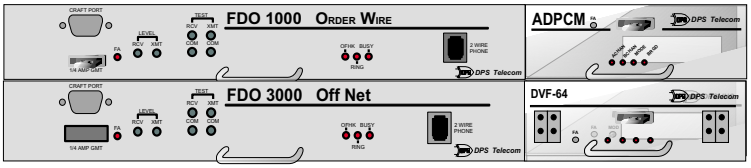
Table C - Network Connector Pinouts (DB 15 - DTE)

Pin No.	Function
1	TCLK (-) (Clock input)
2	TSYN (-) (Sync input)
3	TXD (-) (DPS data output)
4	RXD (-) (DPS data input)
5	RSYN (-)
6	RCLK (-)
7	N/C
8	N/C
9	TCLK (+)
10	TSYN (+)
11	TXD (+) (DPS data output)
12	RXD (+) (DPS data input)
13	RSYN (+)
14	RCLK (+)
15	N/C









Front View

Terminal Order-Wire w/ Off-Net Package
D-PG-410-11C-00
3-1-99

Fig. 22 - 410 package combines order-wire and off-net in digital applications.

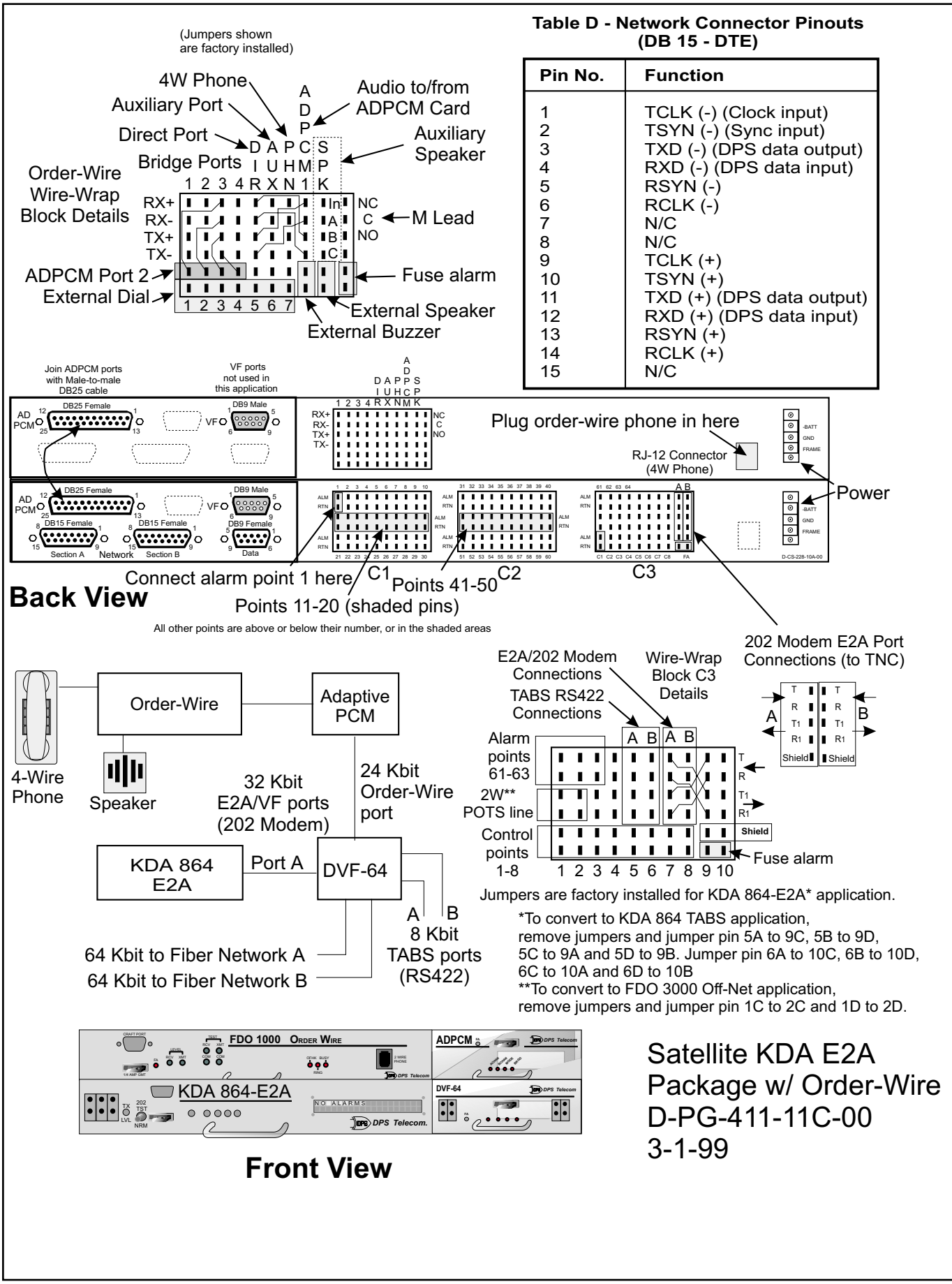
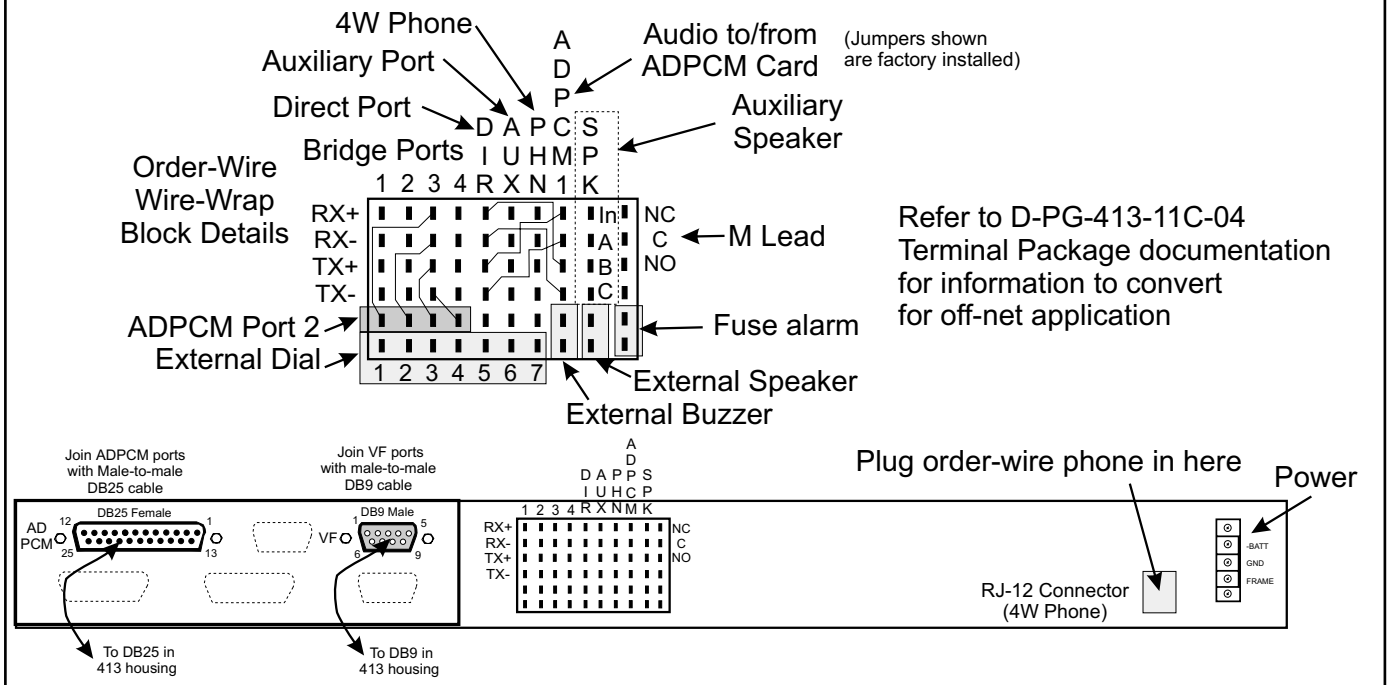
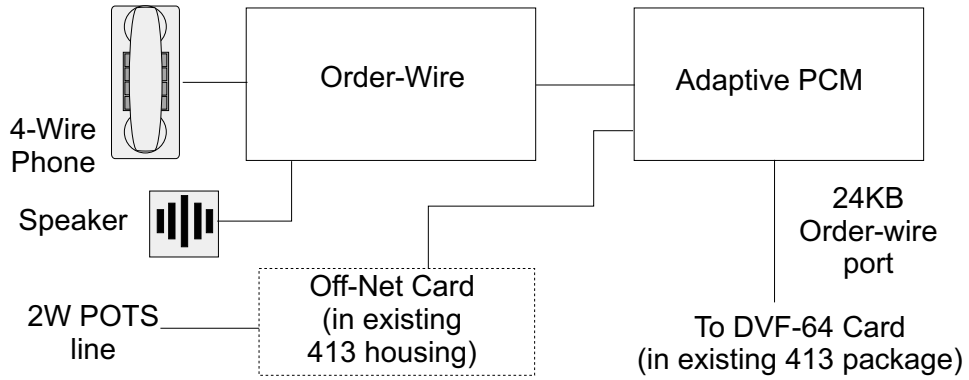


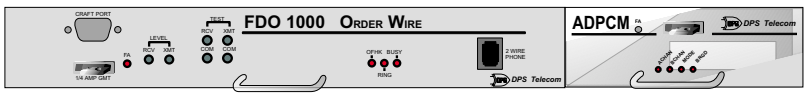
Fig. 23 - 411 package combines order-wire and KDA E2A network element in digital application.

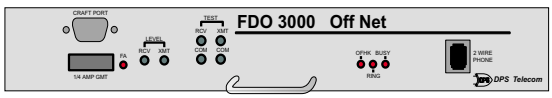


Back View



NOTE: The combined 413 and 414 packages are equivalent to a 410 Package (Terminal Order-wire with Off-Net).





Loose Off-Net card (install in existing 413 package)

Order-Wire Expansion Package W/ Off-Net card D-PG-414-11C-04 4-7-99

Front View

Fig. 24 - 414 package adds order-wire shelf and off-net card.

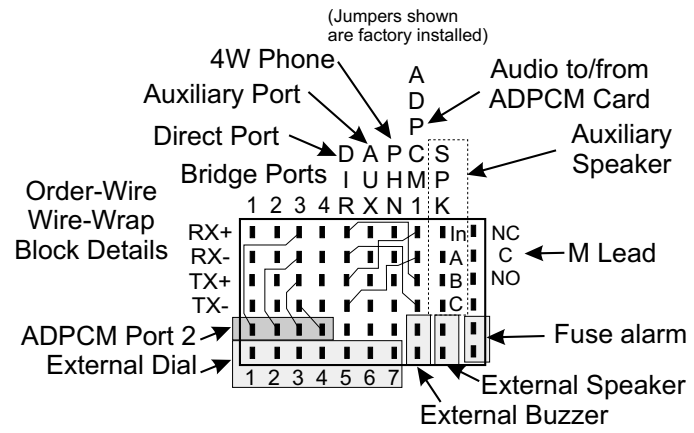
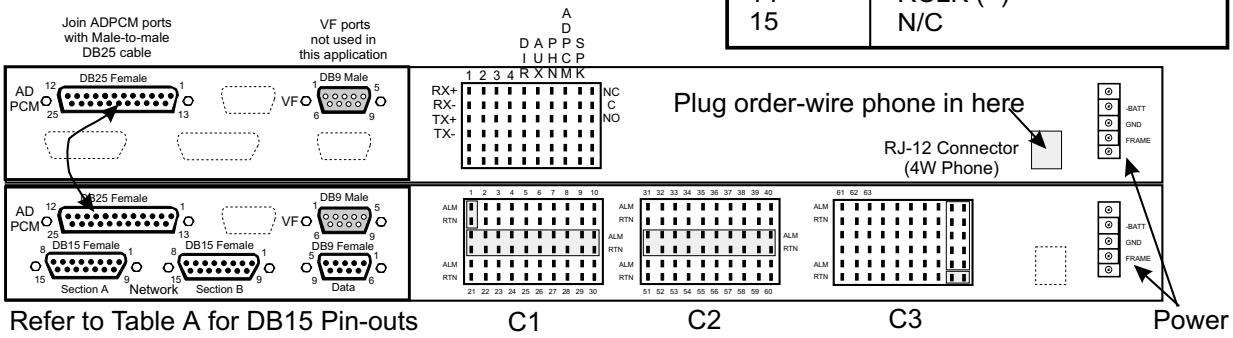
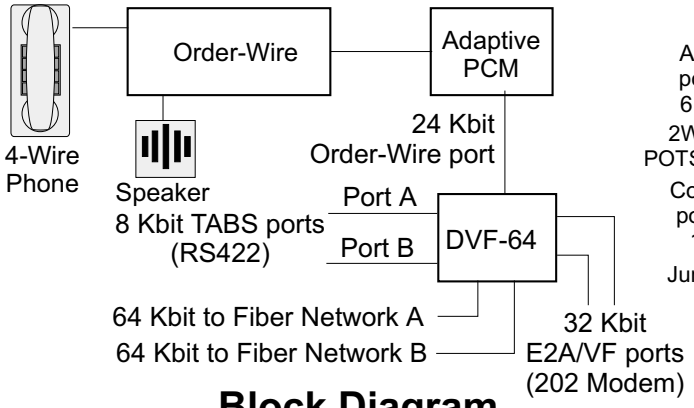


Table E - Network Connector Pinouts (DB 15 - DTE)

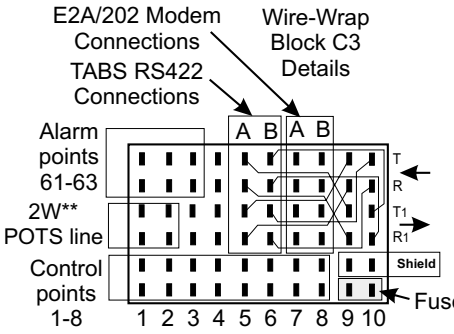
Pin No.	Function
1	TCLK (-) (Clock input)
2	TSYN (-) (Sync input)
3	TXD (-) (DPS data output)
4	RXD (-) (DPS data input)
5	RSYN (-)
6	RCLK (-)
7	N/C
8	N/C
9	TCLK (+)
10	TSYN (+)
11	TXD (+) (DPS data output)
12	RXD (+) (DPS data input)
13	RSYN (+)
14	RCLK (+)
15	N/C



Back View

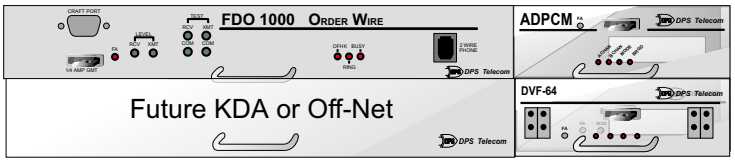


Block Diagram



Jumpers are factory installed for KDA 864-TABS* application.

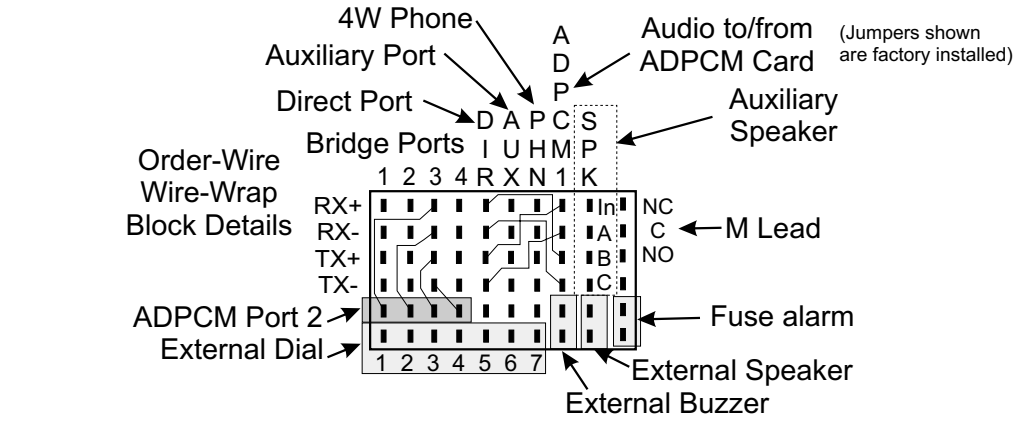
*To convert to KDA 864 E2A application, remove jumpers and jumper pin 7A to 9C, 7B to 9D, 7C to 9A and 7D to 9B.
**To convert to FDO 3000 Off-Net application, remove jumpers and jumper pin 1C to 2C and 1D to 2D.

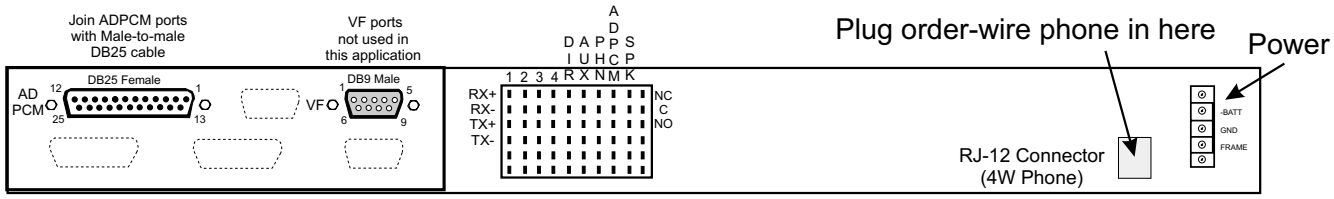


Front View

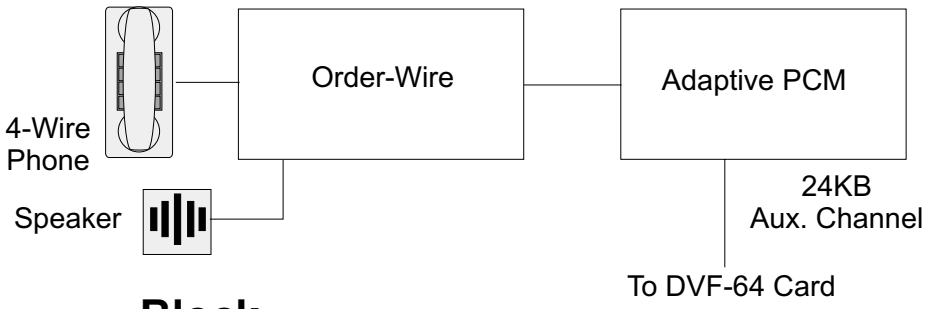
Satellite
Terminal Package
with Order-Wire
D-PG-605-11C-04
4-7-99

Fig. 25 - 605 package is used at sites that do not require a network element.



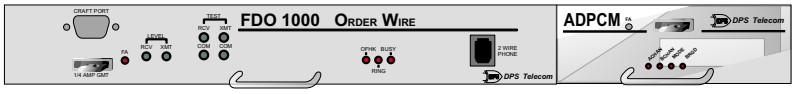


Back View



Block Diagram

Order-Wire
Expansion Package
(for terminal or
satellite location)
D-PG-635-11C-04
4-7-99



Front View

Fig. 26 - 635 package is used to add order-wire to a site with existing KDA network element and DVF-64 card.

Table F - Network Connector Pinouts (DB 15 - DTE)

Pin No.	Function
1	TCLK (-) (Clock input)
2	TSYN (-) (Sync input)
3	TXD (-) (DPS data output)
4	RXD (-) (DPS data input)
5	RSYN (-)
6	RCLK (-)
7	N/C
8	N/C
9	TCLK (+)
10	TSYN (+)
11	TXD (+) (DPS data output)
12	RXD (+) (DPS data input)
13	RSYN (+)
14	RCLK (+)
15	N/C

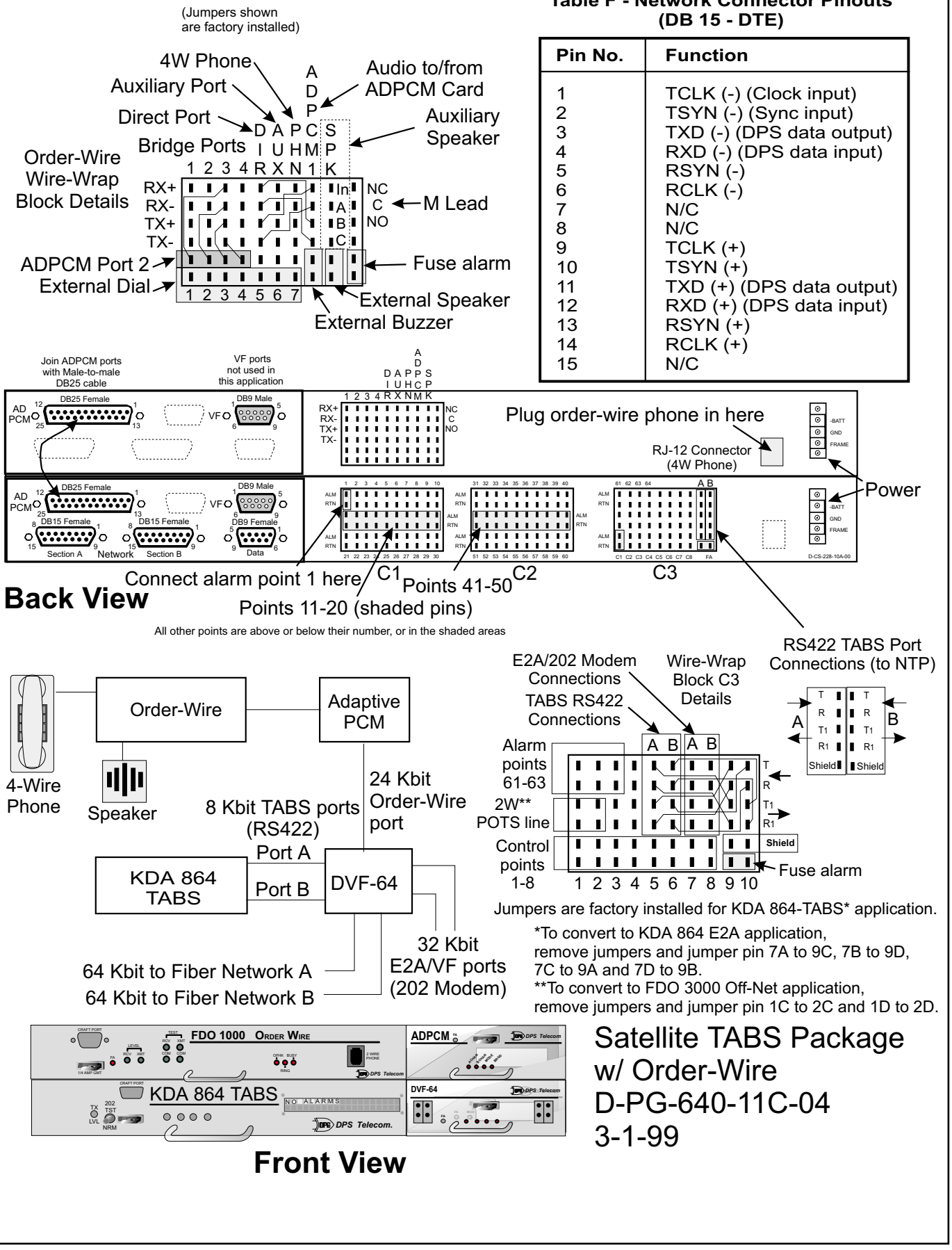


Fig. 27 - 640 package combines order-wire with KDA TABS network element in digital application.

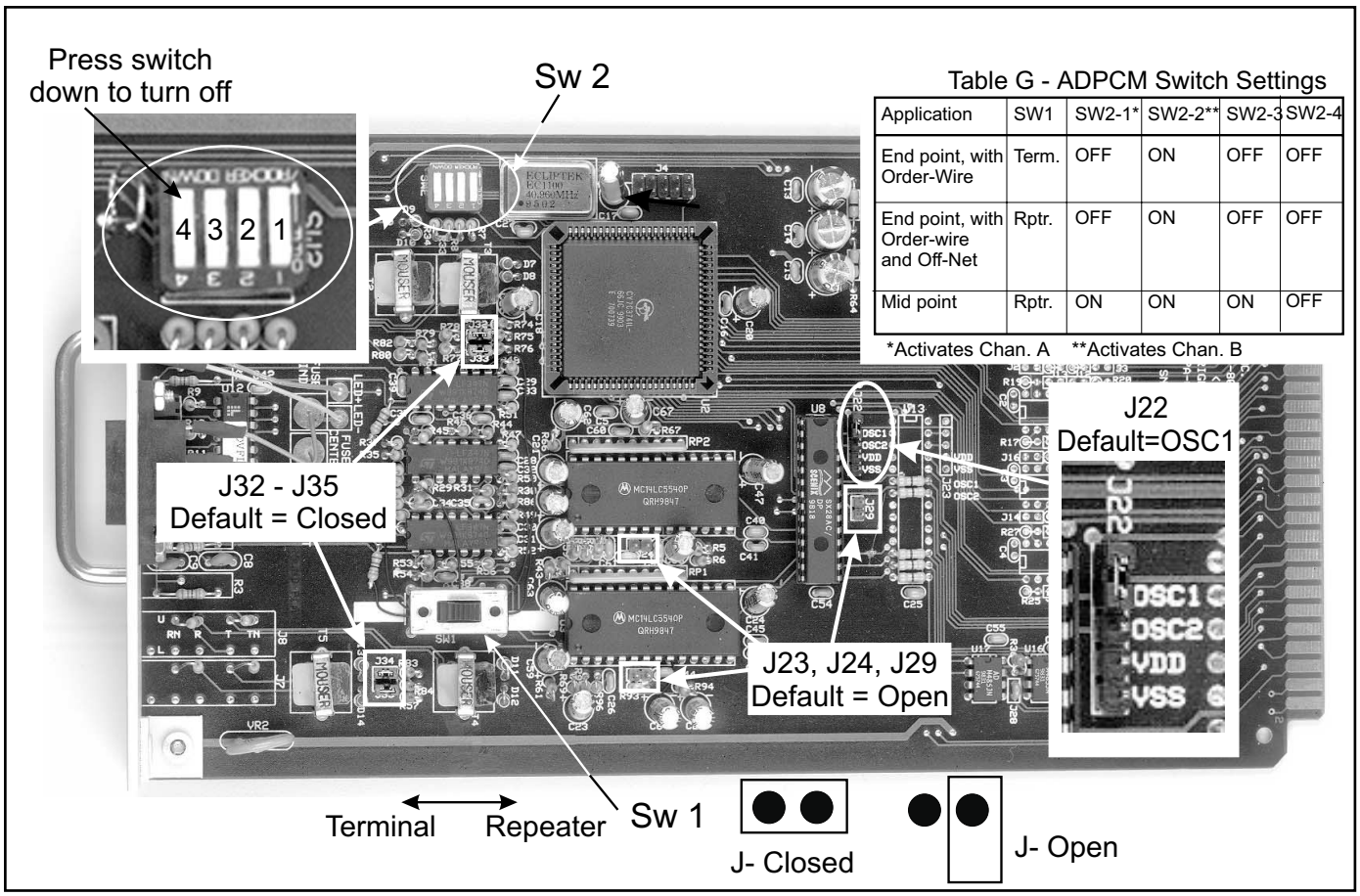


Fig. 28 - Set Terminal / Repeater switch on the ADPCM card.

Test and Acceptance

- Calibrate levels per Table H.
  NOTE: If the order-wire is equipped with an ADPCM, the levels will be pre-set at the factory and this step may be skipped.
- Perform a general test of the order-wire by calling a few stations and having a station call back in to the site you are installing.

Table H - Level set procedure (for automatic privacy mode using the ADPCM)

Step	Action	Results
1	**Set output level at station A** a. Connect meter to the TX test points on the front panel of station A. b. Lift handset and press button '1.' c. Adjust TX level pot on front panel d. Remove meter from test points.	Measure no signal. Measure some level around -10dBm. Read -10dBm
2	**Set input level at all other stations** a. Connect meter to the RX test points on the front panel of a station. b. At station A press button '1' on the phone (phone is off hook). c. Adjust RX level pot on front panel. d. Proceed with step 3 before moving on to another station.	Measure no signal. Measure some level around -10 dBm. Read -10 dBm.
3	**Set output level at all other stations** a. Connect meter to the TX test points on the front panel of a station. b. Lift handset and press button '1'. c. Adjust TX level pot on front panel. d. Remove meter from test points.	Measure no signal. Measure some level around -10dBm. Read -10dBm
4	Go on to other stations and perform steps 2 and 3.	As in steps 2 and 3.
5	Return to station A and perform step 2.	As in step 2.

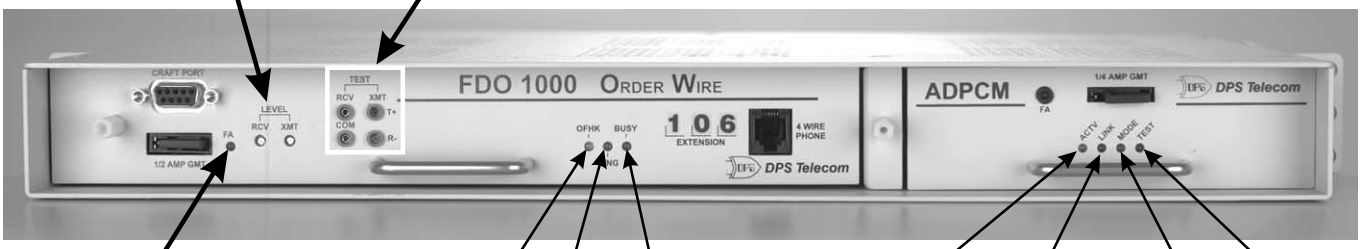


Table I - ADPCM Led Meanings

LED	Color	Meanings
ACTV	OFF Solid GRN Flashing GRN Flashing RED Flashing RED/GRN	DVF Channel A Off DVF Channel A active Loss of transmit sync Loss of receive sync Loss of 24 Kbit sync between ADPCM and DVF cards
Link	OFF Solid GRN Flashing GRN Flashing RED Flashing RED/GRN	DVF Channel B Off DVF Channel B active Loss of transmit sync Loss of receive sync Loss of 24 Kbit sync between ADPCM and DVF cards
Mode	OFF Solid RED	Repeater switch Off Repeater switch On and bridged
Test	Off	This LED has no current function
FA	Solid RED	Blown Fuse

Fig. 29 - LEDs on Order-Wire and ADPCM show device status.

Specifications

VF interface levels, Direct Port: -16 to +7 dBm	
VF Interface Levels, Bridge Ports:	-16 dBm Transmit +7dBm Receive
Bridge Type:	4-Way / 4-Wire, Passive
Bridge Return Loss:	>40 dB
Bridge Trans-Hybrid Loss: >56 dB	
Frequency Range:	300 to 3000 Hz
Signaling:	Standard DTMF
All Call:	Programmable option
Station Call:	1, 2 or 3 digit
Physical Size:	1-3/4" X 19" X 12" case
Weight:	3 lbs
Voltage Range:	Option 0 = -18 to -72 VDC Option 2 = -18 to -36 VDC Option 4 = -36 to -72 VDC
Current:	500 mA
Fuse:	1 Amp
Speaker Amplifier:	2 Watts, 8 Ohms, included

Options and Model Numbers

FDO-1000-10A-0V	VF Order Wire (w/o phone)
Options:	V: 1=120VAC, 2=-24VDC, 4=-48VDC;
D-PC-802-11C-04	Replacement card, -48 VDC
D-PC-805-11C-04	ADPCM card, -48 VDC

Companion Off-Net

FDO-3000-10A-0V	Off-Net Interface for Order-Wire.
D-PC-801-11C-04	Replacement card, -48 VDC
D-PC-803-11C-04	DVF-64 card, -48 VDC

Accessories

FDO-1200-10A-00	External Speaker, Wall Mount
FDO-1301-10A-00	Trimline Phone w/DTMF Dial, 4-wire, beige
FDO-1301-10A-01	Trimline Phone w/DTMF Dial, 4-wire, white
FDO-1501-10A-00	Active 4 way / 4 wire Bridge

Table J - Packages that use the FDO 1000 Order-Wire

Part Number	Package Name	Components	Manuals for companion elements
D-PG-410-11C-04	Terminal Order-Wire with Off-Net	FDO 1000 / Phone / Speaker / ADPCM FDO 3000 / DVF-64 (2 Shelves)	UM117239
D-PG-411-11C-04	Satellite E2A with Order-Wire	FDO 1000 / Phone / Speaker / ADPCM KDA 864-E2A / DVF-64 (2 Shelves)	UN1175B8
D-PG-414-11C-04	Order-Wire and Off-Net Expansion (to add to 413 to make a 410 package)	FDO 1000 / Phone / Speaker / ADPCM FDO 3000 (card only) (1 Shelf)	UM117239
D-PG-605-11C-04	Satellite Terminal with Order-Wire	FDO 1000 / Phone / Speaker / ADPCM Blank module / DVF-64 (2 Shelves)	UM118129
D-PG-635-11C-04	Order-Wire Expansion	FDO 1000 / Phone / Speaker / ADPCM (1 Shelf)	None
D-PG-640-11C-04	Satellite TABS with Order-Wire	FDO 1000 / Phone / Speaker / ADPCM KDA 864-TABS / DVF-64 (2 Shelves)	UM1166B8

NOTE: Fig. 15 shows how packages can be expanded.

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