



## The Highly Programmable Interconnect for Complete System Control

### FEATURES

- For use with simplex, half-duplex, and full-duplex radio networks
- Regenerated DTMF or pulse dialing
- VOX & sampling combined for optimal simplex operation
- Microprocessor-based; nonvolatile system parameters
- Programmable mobile and telco access/disconnect codes
- Programmable Toll Inhibit and Call Time Limit
- "Privileged User" access codes override restrictions
- Privacy Mode for half-duplex operation
- Adjustable hybrid balance
- Auxiliary control-relay accessible from phone or mobile
- Digital Voice Delay option improves simplex operation
- All programming by DTMF via telephone or mobile
- One year parts and labor warranty

### INTRODUCTION

The Model 35A Microconnect is a multi-featured, microprocessor-based telephone interconnect designed for use with simplex, half-duplex and full-duplex radio networks. It gives mobile radio users an exceptionally reliable and flexible method of placing and receiving phone calls.

System operators will benefit from the Model 35A's flexibility; its user-programmable features make it a "customized" phone patch that adapts to any system's specific needs. Programming is done quickly and easily from any DTMF telephone or mobile radio.

The Microconnect is designed for system operators who want complete control over their telephone interconnect system. Call lengths, access codes, and toll inhibits can all be tailored so phone connections never violate system regulations. If desired, an operator can allow trusted users to override calling restrictions with "Privileged User" access codes.

Simplex operators will find that the Microconnect significantly upgrades their system's operation. While other telephone interconnects are either VOX or sampling units, the Model 35A incorporates both methods for optimal simplex applications.

### Mobile Access Codes

A mobile user places a telephone call by keying up and entering the proper DTMF mobile access code. These programmable codes can be up to 10 digits in length.

“Normal User” access codes are subject to the programmable calling limitations. System managers or other privileged users may originate calls using special “Privileged User” access codes. These codes override any call restrictions such as Toll Inhibit or time limitations.

After entering an access code, a mobile releases the PTT button to verify access to the Microconnect. A valid code causes the Microconnect to access the phone line, and the mobile will receive a dial tone. If the access code is invalid, it will be ignored. The Model 35A can also be set up to only accept a certain access code that is sent automatically from a microphone, not entered manually.

In the “No-DTMF Mobile Mode”, the Microconnect, equipped with an external tone decoder, will allow a mobile radio without a DTMF pad to gain access to autodial 9 simply by keying up and generating a tone.

### Toll Inhibit

To ensure that mobile users abide by the system operator’s regulations, the Model 35A checks all outgoing calls for programmed call restrictions. If a forbidden entry is made, the call is aborted and the mobile hears an error tone.

Toll Inhibit may be programmed to reject phone numbers with certain first or second digits (second-digit restrictions are useful for private branch exchange systems). Up to four digits may be specified as invalid for the first or second digit. If desired, any combination of first and second digit restriction may be programmed.

Toll Inhibit may also be programmed to disallow phone numbers according to length (e.g.; seven-digit maximum for public telephone systems, four-digit maximum for PBX).

The Microconnect can also disallow Normal User over-dial (DTMF transmitted by a Normal User once a call has already been placed). This ensures that a Normal User cannot redial after receiving the “second” dial tone that appears under certain circumstances.

### Simplex Sampling and VOX

The Model 35A Microconnect offers superb simplex operation since it uses a VOX detector as well as dial tone and conversation sampling. The owner can set up the Model 35A so it will always operate with VOX, but if the phone audio remains continuous for the “Into-Sampling Time”, the Microconnect will revert into sampling. All of the VOX and sampling features are user-programmable, so the Microconnect will adapt to fit the specific needs of any simplex system.

### Simplex Digital Voice Delay

During simplex operation, no syllables will be lost by the finite response times of the system’s components. The digital voice delay option will key up the base station as soon as it receives an audio transmission, but it will delay the audio broadcast for up to 1.5 seconds to prevent the loss of the initial syllables.

### Half-Duplex Privacy Mode

In the privacy mode, a mobile eavesdropping on a phone conversation will not be able to hear the conversing mobile’s audio transmissions. The Model 35A does this by not retransmitting the mobile’s audio portion at the radio site, and by sending masking tones during the mobile’s audio broadcast.

### Telco Answer Modes

Phone-to-mobile callers may request access to a mobile by dialing the telephone number of the Microconnect. A caller will hear a programmed number of standard telephone rings. The processing of the call will depend on the answer mode.

In the “Answer/Ringout” Mode, the Microconnect will answer a caller and send a programmed number of ringouts to the radio system. An answered call is one that has been connected; a ringout is the simulated ringing heard by the mobiles (and callers) that indicates the presence of an incoming telephone call.

To prevent unwanted callers from accessing the radio system, the “Answer/Access/Ringout” Mode will request a Telco Access code before ringouts are sent to the mobiles. An invalid code will disconnect a caller.

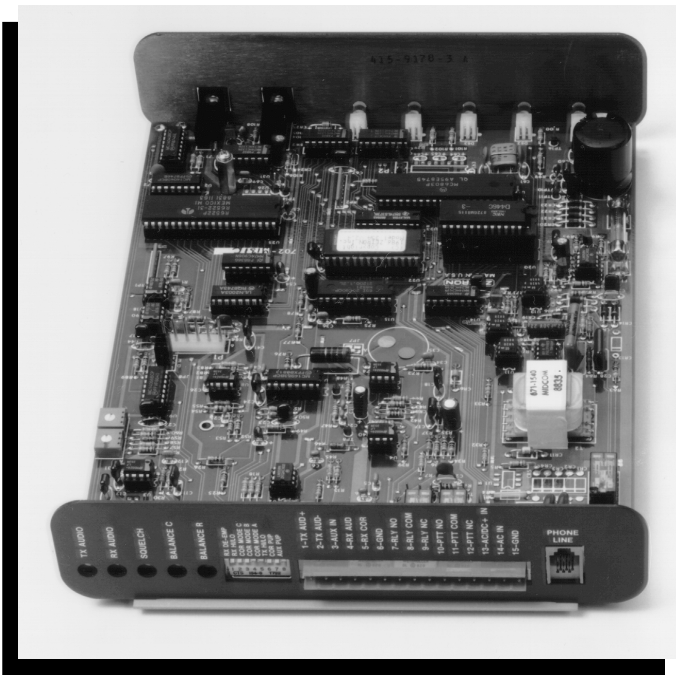
The “No Answer/Ringout” Mode will send ringouts to the mobiles, but the caller will not be answered until a mobile responds.

The Microconnect can also answer an incoming call and give immediate access of the radio channel to the telephone caller.

## PROGRAMMABLE FUNCTIONS

Model 35A programming is quick and easy. After gaining access with the "Supervisor" programming code, an operator selects the feature number and enters the desired parameters. Prompting beeps indicate that acceptable programming has occurred. If desired, an operator can return the unit to the factory default settings at any time.

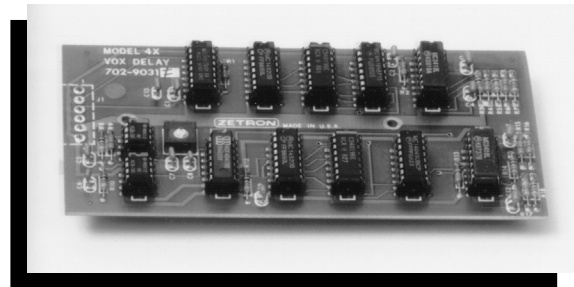
Radio System Mode	Simplex, half-duplex, full-duplex	Auxiliary Relay	Set to turn ON/OFF by mobile or telco access/disconnect; set to be always ON or OFF
Sampling	Select dial tone sample rate and width. Select time to start conversation sampling; set rate and width	COR	Set COR hold and quiet times
VOX Hold Time	Set from 0.0 to 5.0 seconds	COR Aux. Input	Select active-high or active-low input to provide phone access to users with certain subaudible tones
Toll Inhibit	Program unit to reject calls with certain first and/or second digits; designate up to four different digits as invalid. Select maximum number length. Program to allow or disallow Normal User over dial	Mobile Codes	Select Normal User and Privileged User access and disconnect codes; choose up to 10 digits
Call Time Limit	Set 1 to 59 minutes, or OFF	Telco Codes	Choose up to 10 digits for telephone access and disconnect codes
Mobile Activity Time	Select time interval before inactive mobile is cut off	Supervisor Code	Choose up to 10 digits for the programming code
Rings, Ringouts	Select number of rings before Microconnect answers, number of rings to disconnect, number of channel ringouts, and alternate ring tone	2nd Dial Tone Disconnect	Set ON or OFF
Telco Answer Mode	Set to answer phone and send ringout, to ringout without answering, or to request access code before ringout	Speed Dials	Program nine speed-dial numbers, labeled 1 - 9
Telco Prompts	Enable or disable phone party prompting beeps. Select beep frequency	Auto-Redial	Set ON or OFF. Speed dial 0 is last number redial
Tone-out Delay	Select mobile Tx to Rx delay	Direct Telco Access	Set ON or OFF. Gives phone party immediate access to radio channel
Tx to Rx Time	Select base station Tx to Rx	"No-DTMF Mobile" Mode	Set ON or OFF. Allows mobile without DTMF pad to access speed dial 9
Dialout	Select the dialout termination mode. Program DTMF timeout, number of dialout digits, and type and rate of dialing	Privacy Mode	Set ON or OFF. The mobile side of conversation is masked with a fast busy tone
Hookflash Function	Set ON or OFF. Hookflash with regenerated DTMF dialing is accomplished with a half-second DTMF 1; hookflash only is accomplished with a half-second DTMF 2	Fast ANI	Set ON or OFF. Gives access to fast ANI microphones and can disallow same codes if entered manually on DTMF pad
		Morse ID	Set 1 - 10 digits. Select transmission at end of call or at programmed interval
		Off-Hook Detect	Set ON or OFF. Will give busy tone to a mobile if a parallel telephone connected to the Model 35A is already in use.



The Model 35A (left) is fully enclosed in a low-profile aluminum chassis that can sit under a standard 2500 series telephone. Installation is facilitated by a modular phone jack for telephone connections. Connections to the radio are made to a removable screw terminal strip; normal connections are PTT (push-to-talk), COR (carrier-operated relay), transmitter audio, and receiver audio; all adjustments are made on the rear panel.

The digital delay board (below), which enhances both simplex and half-duplex operation, fits securely inside the unit. All ICs on the board and in the Model 35A are socketed for easy replacement or servicing.

All Zetron circuitry is thoroughly tested and backed by a full one-year warranty.



## SPECIFICATIONS

### RECEIVER

Audio Input 0.3 to 4.0 volts peak-to-peak  
 COR Modes Active High/Low; Adjustable Threshold; Internal Squelch; VOR

### TRANSMITTER

Audio Output 0.1 to 3.0 volts peak-to-peak

### TELEPHONE

Levels Standard end-to-end, adjustable  
 DTMF Standard tones: -40 dB referenced, nominal-maximum-input sensitivity

### GENERAL

Connections Receive audio; PTT; transmit audio; auxiliary input; auxiliary relay output; power; ground; telephone line  
 Connector Type Detachable screw terminal strip; telephone line connected through standard modular phone jack  
 Transmit DPDT relay; 3 internal connections, 3 external connections  
 Power Input 12V DC; optional 120/240V AC  
 External Adjustments Five adjustments from rear panel: receiver input level (RX AUDIO); squelch/COR level (SQUELCH); transmitter output level (TX AUDIO); hybrid balance (Balance C), (Balance R)

Internal Adjustments Phone input level (PHONE IN); phone output level (PHONE OUT)  
 Auxiliary Input TTL levels; active-high or -low  
 Auxiliary Output DPDT relay. 3 internal connections, 3 external connections  
 Indicators Power (POWER); phone activity (PHONE); carrier detect (CARRIER); transmit (TRANSMIT); DTMF decode (DTMF)  
 Front Panel Switches DISCONNECT and CONNECT  
 Rear Panel Switches Receiver input level (RX HI/LO); receiver input flat/de-emphasized (RX DE-EMP); COR modes (COR MODE A, COR MODE B, COR MODE C), transmit audio output level (TX HI/LO); auxiliary pull-up (AUX PUP), COR pull-up (COR PUP)  
 Rx Audio Processing Flat or de-emphasized  
 Size 10.5 x 8 x 2 in.  
 Weight 2.5 lb.  
 Temperature Range 0 to +65 degrees C.  
 32 to +149 degrees F.

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