



## AN/FCC-100 Multiplexer

### The Workhorse of Tactical Communications

- Maximize Bandwidth
- Voice, Video and Data Traffic
- Legacy Support
- Crypto Support
- Unique Tactical Interfaces
- Variety of Accessories and Spares Available
- Newly Redesigned Cards Eliminate Obsolescence Issues

#### Overview

DNE Technologies has a tradition of building rugged, reliable voice/data multiplexers for military and secure applications. The AN/FCC-100(V)9 is the newest version of the DNE tactical multiplexer family and delivers compressed voice communications, and flexible data interfacing.

The AN/FCC-100(V)9 is a 7" high multiplexer which supports up to sixteen user interfaces and mounts in a 19" EIA rack or optional tactical case.

A wide variety of user interfaces and data rates are supported, allowing most types of communication to be transported economically over a single satellite or microwave radio link. The AN/FCC-100(V)9 supports both digital and analog (VF) user interfaces which may be mixed as required to meet specific system requirements. The (V)9 operates on 110/220 VAC, 50-60 Hz.

Users of earlier versions of the AN/FCC-100 will note that most data rates and traffic types continue to be supported, making the AN/FCC-100(V)9 backward compatible with a majority of older units. Upgrades may be available to bring earlier versions up to the current (V)9 revision. Contact DNE for more details regarding available upgrades for your particular version.

DNE has recently redesigned most of its option cards for the AN/FCC-100 while preserving interoperability with previously released cards and versions. Users ordering today's option cards will notice significantly less components per card, increasing the reliability of each card.

## Overview

The release of the AN/FCC-100(V)9 also incorporated a number of design changes, aimed at increasing the reliability of the unit by replacing key components whose obsolescence was imminent. The redesign allowed support of the AN/FCC-100 to keep pace with the continuing demand for its use in large communication applications. The new AN/FCC-100(V)9 incorporates a more powerful microprocessor, and an LCD display front panel, as well as a number of component changes.

In 2002, DNE also began a program to update a number of interface cards for the AN/FCC-100. The cards have undergone significant redesign to prevent obsolescence and to increase reliability through the use of fewer components. Frequent users of the AN/FCC-100 will note significant cosmetic differences between older interface cards and newer cards shipped in 2002 and later. These newly redesigned cards are completely interoperational with older, installed cards yet are form, fit and function replacements with no discernable difference to the operator.

Since the configuration of the AN/FCC-100(V)9 is dependent on user-specific system requirements, DNE suggests contacting the factory or your local sales representative to discuss the unique configuration needed for your application.

## Interoperability

DNE has made efforts to preserve backward compatibility with previously fielded units despite a number of redesigns throughout its lifespan. All DNE AN/FCC-100(V)9 multiplexers will communicate with older versions at the rates supported by the older units.

Frequent AN/FCC-100 operators will notice a number of cosmetic changes to the internal interface cards. There is no change in the functionality or compatibility of the individual cards and all are interoperable with older versions.

## Timing:

Timing to the AN/FCC-100(V)9 can be derived through either NRZ or CDI connections. NRZ timing is supported in both the asymmetric mode or the equirate mode. CDI timing is equirate.

NRZ asymmetric Transmit timing supports four sources, including Internal, Tx Clock In, Rx Clock In and Aux Clock In. Asymmetric Receive timing supports Internal, Rx Clock In and Aux Clock In. NRZ Equirate transmit timing also supports Port 16 Tx Clock In.

CDI Equirate timing supports Internal, Rx Clock, Aux Clock, Tx and Port 16 Tx Clocking.

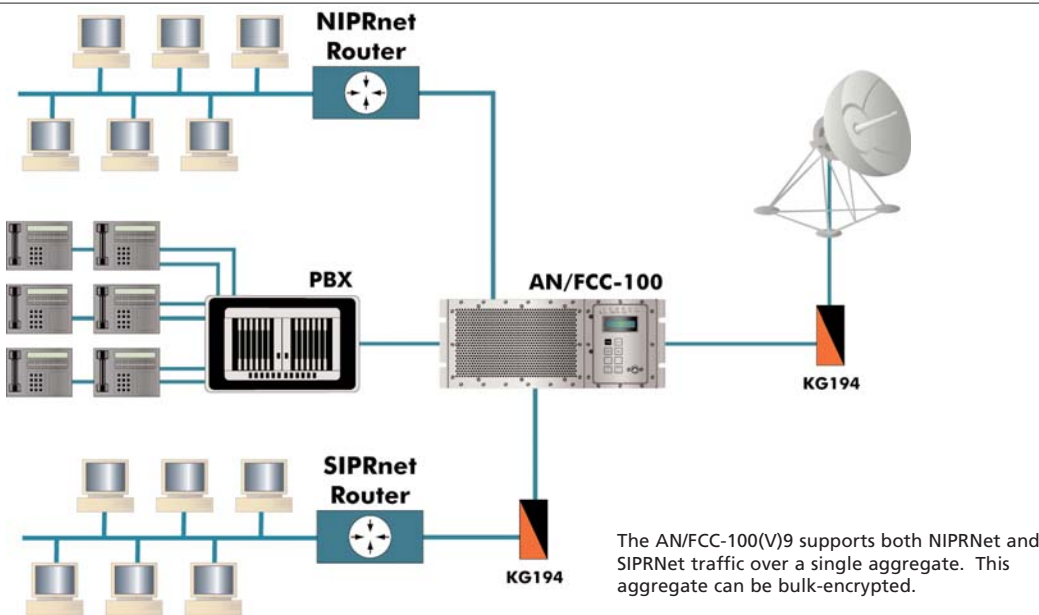
## Additional Options:

The AN/FCC-100(V)9 is supported by a number of options designed to enhance its use in tactical environments. These options include:

- Transit case with shock mounting
  - Transit case for mux and spares drawer
  - Connectorized rear panel with UG-1837 connectors for use with CX-11230 cables. Includes lightning protection on TRI-TAC interfaces
  - Quick-connect push connectors for field wire
  - AC power supply with auto-sensing capability.
- Upgrades to older units may also be available. Contact DNE for details.

Product	Ports (Types/Max. Rate)	Aggregate	Comments	Upgrade
AN/FCC-100(V)1 & (V)1X	Sync, Anisoc, CDI Up to 64 kbps	NRZ, CDI Up to 256 kbps	Original LSTDM AC/DC Primary Power	(V)2 or (V)4
AN/FCC-100(V)2 & (V)2X	Sync, Anisoc, CDI, CVSD, PCM Up to 64 kbps	NRZ, CDI Up to 256 kbps	Added voice capability AC/DC Primary Power	(V)4
AN/FCC-100(V)4 & (V)4X	Sync, Anisoc, CDI, CVSD, PCM, Telemetry Sub-multiplexer Up to 64 kbps	NRZ, CDI Up to 256 kbps	Added Telemetry Sub-Mux AC/DC Primary Power	None
AN/FCC-100(V)3X	Sync, Anisoc, Async, CDI, CVSD, PCM Up to 512 kbps	NRZ Up to 2,048 kbps	TEMPEST Certified AC Primary Power	(V)9 or (V)9X
AN/FCC-100(V)5 & AN/FCC-100(V)6	Sync, Anisoc, Async, CDI, CVSD, T-CDI, PCM Up to 576 kbps	NRZ, T-CDI Up to 2,048 kbps	95970000 CDI Muxes (V)5 50-60 Hz (V)6 50-400 Hz	(V)9 or (V)9X
AN/FCC-100(V)7 & AN/FCC-100(V)8	Sync, Anisoc, Async, CDI, CVSD, T-CDI PCM 2/4 wire compressed voice Up to 1152 kbps	NRZ, T-CDI Up to 2,048 kbps	(V)7 AC Primary Power (V)8 AC/DC Primary Power Added 2 wire voice and VF compression	(V)9 or (V)9X
AN/FCC-100(V)9 & (V)9X	Sync, Async, CDI, FX0, FX0, E&M, T-CDI, PCM, 2/4 wire compressed voice Up to 1152 kbps	NRZ, T-CDI Up to 2,048 kbps	LCD Display and redesigned option cards	Current version (9X, AC/DC version, discontinued 2005)

**The table above offers a quick comparison of the AN/FCC-100 versions.** Early versions of the AN/FCC-100 had a maximum aggregate rate of only 256 kbps and are not upgradable to today's aggregate of 2048 kbps. However, earlier versions of the AN/FCC-100 can communicate with today's versions at a maximum rate of 256 kbps.



### Data Rates:

The AN/FCC-100(V)9 can be configured with up to eight interface option cards. Each port carrier interface is brought to a DB-25 connector.

Data rates can be configured with synchronous, asynchronous, and T-CDI at both low-speed and high-speed rates. Data rates supported will depend on the configuration option chosen for each interface slot, but each configuration option offers a wide range of data rates from which the user can choose to maximize the efficiency of the communications link.

### Aggregate Interfaces

The multiplexed signal (aggregate) is user-specified as either RS422/423 or TRI-TAC conditioned diphas (CDI). The synchronous interfaces support a crypto resynchronization capability for circuits that require bulk encryption of the user data.

System timing capabilities are very flexible, supporting virtually all conceivable configurations. The aggregate on the AN/FCC-100(V)9 also provides full duplex. For satellite applications, the AN/FCC-100(V)9 incorporates a user-defined aggregate satellite buffer to offset the timing variations associated with diurnal variations in the satellite's signal.

When the multiplexers are configured for TRI-TAC interfaces, timing from Port 16 can be selected to time the multiplexer aggregate interface. The TRI-TAC interfaces have also been proven to work with MSE equipment, providing interfaces to MSE that could not normally be supported.

### User Interfaces

The AN/FCC-100 supplies a T-CDI interface which provides phantom power and transformer coupled interfaces to phones up to 2km away from the multiplexer, eliminating the need for a separate power supply.

Two and four wire analog voice port devices provide support to a wide range of telephone equipment, including standard telephones, facsimile machines, modems, and the STU-III. An optional voice compression module compresses the digitized analog signal from 64kbps to user-selectable rates of 2.4, 4.8, 7.2, 9.6, 12.8, 14.4, or 16kbps, providing significant bandwidth conservation. STU-III telephone calls can be compressed while in clear mode, while allowing the VF module's modem relay capability permits encrypted voice to use the compressed clear channel with no increase in bandwidth requirements.

### Compatibility

Other DNE products are available for use with the AN/FCC-100(V)9, including:

- CV Series of NRZ/CDI/Fiber Optic converters that extend cable lengths and better position encryption equipment, video cameras and routers; and

- DNE TAC Multi-Service Access Concentrators that provide multiservice packet access at rates of up to 155Mbps OC-3/STM-1 or 20 Mb Serial.

## AN/FCC-100(V)9

<b>Aggregate</b>	The AN/FCC-100 aggregate supports up to 16 user interfaces. The aggregate provides full duplex communications.
<b>Aggregate Drivers</b> Low Speed: CDI Timing: Equireate:	The AN/FCC-100(V)9 can be configured with the following Aggregate Drivers: RS-422-A/RS-423-A; EIA Standard, Rates to 2,048kbps  Internal, Rx Clock In, Tx Clock In, Aux Clock In, Port 16 Tx Clock In
<b>Aggregate Rates</b> Synchronous NRZ:  T-CDI Low Speed: T-CDI High Speed:	Aggregate Data Rates are dependent on Driver Selection (all rates are kbps): 1.2, 2.4, 4.8, 7.2, 9.6, 14.4, 16, 16.8, 19.2, 24, 28.8, 32, 38.4, 48, 50, 56, 57.6, 64, 72, 76.8, 96, 112, 115.2, 128, 144, 153.6, 192, 224, 230.4, 256, 288, 307.2, 384, 448, 512, 576, 768, 1024, 1344, 1536, 1544, 1920, 2048 16, 32, 56, 64 72, 128, 144, 256, 288, 512, 576, 1024, 2048kbps.
<b>Asynchronous Control Terminal Rate</b>	75, 150, 300, 600, 1200, 2400, 4800bps.
<b>Synchronous Port Timing</b> NRZ: T-CDI:	Fully independent transmit/receive: internal, Auxiliary (Ext) Port 16, NRZ or CDI aggregate.  Rx, Tx, AUX, Port 16, internal. Rx, AUX, Port 16, internal.
<b>Satellite Buffer</b>	Variable Length on Rx and Tx Aggregate, set to: 0, +/- 4, +/-8, +/-16, +/- 32, +/- 63
<b>Interfaces</b> Port Carrier: Synchronous NRZ:  CDI: Asynchronous NRZ: T-CDI Low Speed: T-CDI High Speed:	The AN/FCC-100(V)9 can be configured with up to eight interface option cards: Balanced 125 ohms, RS-422A 50, 75, 150, 300, 600 bps. 1.0, 1.2, 1.8, 2.0, 2.4, 3.0, 3.6, 4.0, 4.8, 7.2, 8.0, 9.6, 12, 14.4, 16, 19.2, 24, 28.8, 32, 38.4, 48, 50, 56, 57.6, 64, 72, 76.8, 96, 112, 115.2, 128, 144, 153.6, 192, 224, 230.4, 256, 288, 307.2, 384, 512, 576, 768kbps. 75, 150, 300, 600 bps 1.2, 2.4, 4.8, 7.2, 8.0, 9.6, 16, 19.2, 24, 32, 64, 96kbps 50, 75, 110, 134.5, 150, 300, 600bps, 1.2, 1.8, 2.0, 2.4, 3.6, 4.8, 7.2, 9.6, 19.2kbps Balanced 125 ohms; 16, 19.2, 32, 56, 64kbps Unbalanced 58 ohms; 72, 96, 128, 144, 153.6, 192, 230.4, 256, 288, 307.2, 384, 512, 576, 1024, 1152kbps
<b>Voice Compression:</b>  CELP: STU-III: LD-CELP Secure:	Three optional voice compression interfaces are available: FXS, FXO and 4-wire E&M. Each of these interface cards provide 600 or 900 ohms balanced connections, and 2 PCM Channels at 64 kbps compression (each) Each interface can be ordered with up to two of the following three option cards: 4.8, 7.2, 9.6kbps with Group III Fax (or STE in STU-III mode) clear voice, 2.4kbps LPC, 4.8, 9.6kbps (CELP) 12.8, 14.4, 16 kbps
<b>Dimensions</b>	6.97"H x 18.31"W x 23.19"D, 70 pounds
<b>Temperature:</b>	Operating: 0 - 49 deg C    Storage: 0 - 65 deg C
<b>Power</b>	115 VAC or 230 VAC, single phase 47-63 Hz, 250 watts max.



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