

Model D7239

Embedded Automatic Link Establishment (ALE) Radio Controller with Link Protection

- **Link Quality Analysis (LQA)**
- **Scanning (2 or 5 channels per second)**
- **Selective Calling**
- **Automatic Sounding**
- **Low Power**
- **DSP Technology**

nsgdata.com's D7239 miniature Automatic Link Establishment (ALE) controller board is designed to be installed within new and existing high frequency (HF) radio systems. Using state-of-the-art surface mount components and Digital Signal Processing (DSP), the board fully implements the required provisions of the ALE protocol as defined in both MIL-STD-188-141A and FED-STD-1045 and provides complete ALE interoperability with all other systems adhering to these standards.

The D7239 incorporates optional link protection per MIL-STD-188-141A and FED-STD-1049. This method of link protection scrambles all transmitted ALE words except for orderwire text. The encryption is accomplished using both a user-set key variable and a seed, which contains information concerning the current date, time, and radio frequency. The encrypted traffic can be acquired and decrypted by an ALE device which has been programmed with an identical key variable, and which is set to the same system time. Three usable link protection options are provided: AL-0: No link protection, AL-1: Link protection with one-minute time synchronization, and AL-2: Link protection with two-second time synchronization. AL-2 provides improved link protection over AL-1 due to the tighter time synchronization.

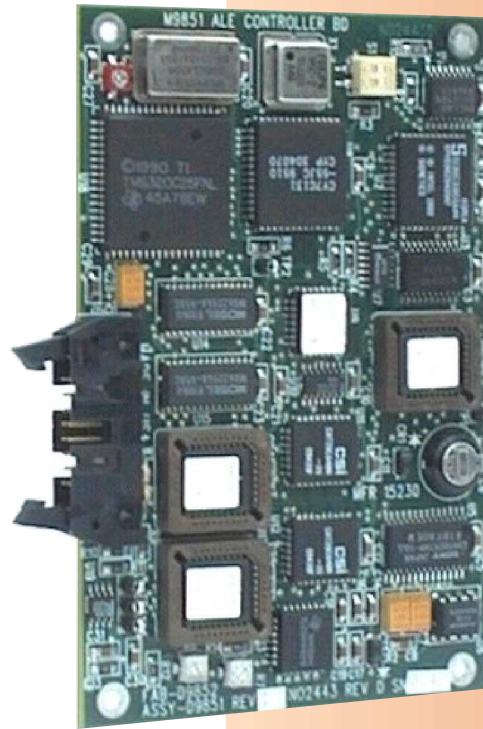
To help simplify system integration, the D7239 has been designed as a completely self-contained system. It contains all the necessary hardware and software to perform ALE functions without requiring extensive system interaction. A full set of commands have been provided which allow the system manager to "fill" the controller with all of the parameters pertaining to ALE operation - thus relieving the radio from the burden of keeping track of items such as Station ID's, channel assignment maps, sounding timers, etc.

The actual I/O requirements of the D7239 have been kept to a minimum. The interface consists of a serial Command line, a serial Status line and audio I/O. Power requirements have also been kept to a minimum - only a single +5V source is required.

The standard ALE board is 3" x 5", however boards may be customized by our technical staff to meet specific size and mounting requirements. Please contact our Sales Department for more information.

D7239 Specifications

Model D7239



Physical

Size:

Approximately 3" x 5"

Weight:

2.7 Oz. (80g)

Environmental

Temperature:

Operating: -40 to +65 degrees C

Storage: -40 to +75 degrees C

Humidity:

0 to 95% non-condensing

Altitude:

Operating: 0 to 15,000 feet

Storage: 0 to 25,000 feet

Electrical

Power:

+5 volts @ 250mA (typical)

Audio Bandwidth:

500 - 2750 Hz

Tone Frequencies:

750 Hz, 1000 Hz, 1250 Hz, 1500 Hz, 1750 Hz,
2000 Hz, 2250 Hz and 2500 Hz

Audio I/O level:

-10 to 0 dBm

Audio Input Impedance:

Selectable 600 Ohm or 10K Ohm

Channel Scan Rate:

Selectable: 2 or 5 channels per second.
Manual control available.

Listen Time / Channel:

100ms minimum active listen time per channel
is required for ALE detection.
(500ms total dwell time at 2 channels / second)
(200ms total dwell time at 5 channels / second)

Transmitter Tuning:

Initiated via 'Keyline On' command from ALE.
Monitored via status report from radio or via
selectable timer.

Remote Control:

Separate Serial In/Out Control Lines. TTL
Signal Levels; ASCII Characters; Selectable
9600 or 19200 baud; 1 start bit, 8 data bits
1 stop bit, no parity.

Keyline/PTT I/O:

Selectable via software command or via TTL
control lines. The hardwire option has
programmable signal polarity.

- **MIL-STD-188-141A /
FED-STD-1045
interoperability**
- **Simplified System
Integration**
- **Optional Link
Protection per
MIL-STD-188-141A
(AL-0, AL-1 and AL-2)**