**Introduction:**

Daniels Electronics Ltd. offers a two-day training course that covers the complete Daniels MT-3 Radio System product line.

A third day may be added to the course (by the instructor or the customer), allowing for more hands-on tuning and programming by the students, however the students should be able to supply additional equipment for the hands-on portion as described in the Course Requirements.

The course may be offered at the Daniels factory in Victoria, BC, Canada or in other select locations throughout North America. The courses are typically scheduled 2-3 months in advance. The Daniels training department maintains an e-mail contact list to notify students of upcoming courses when they are scheduled.

The Daniels training department can also schedule a training course at your facility for a minimum charge based on 8 students. Please contact the Daniels Sales department for a quote.

Contact Information:**Pete Lunness, ASCT**

Training and Special Projects

Direct Line: 1-250-414-6279

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Pete is a member of the Applied Science Technologists & Technicians of B.C., has a diploma in Electronics Engineering Technology from Camosun College and a Certificate in Adult and Continuing Education from the University of Victoria. Pete has been instructing Daniels technical training courses for eleven years.

Student Prerequisites:

It is not necessary, but the students should be familiar with conventional Two-Way Radio Communications systems.

Course Handouts:

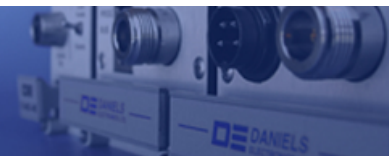
Course Enrollment includes a set of Daniels Instruction manuals, MT-3 User Guide, Technical Notes, training tool kit and some other items. The Guide and Technical Notes will be referenced and used throughout the class.

The Guide is available at www.danelec.com/support/training/training_dl.asp.

The Technical Notes are available at www.danelec.com/library/english/technotes.asp.

Course Length:

Although the course length may vary, the course typically runs from 8:00 AM until 4:30 PM each day, with a 45 minute lunch and several 15 minute breaks throughout the day.



Course Requirements:

When holding the course at the customers' facility, the customer is required to provide a training room free from distractions and comfortable for the students.

The instructor will supply a projector, a Daniels radio system with a variety of control cards, an IFR 3920 Test Set, and all additional equipment required to demonstrate Daniels tuning, testing and maintenance procedures.

For a more hands-on training course, the customer can also set up a work area for every 3 or 4 students that includes:

- * Daniels radio system (Repeater, Base, Crossband, Transportable, etc.)
- * Test Set (IFR 1200, IFR COM-120, Marconi, HP or other test set)
- * Set of extender cards (EC-48RD or EC-48RK-1.22, and EC-96D1)
- * RF cables and adapters (N to BNC, SMB to BNC)
- * Alligator clips used to connect to an audio line (or a custom audio connector)
- * Power supply and cables
- * Any other meters (DVM, SINAD, etc. not available on Test Set)
- * Any other test equipment typically used by students to maintain a site

The students may also bring any of this equipment to any Daniels training course.

Course Objectives / Learning Outcomes:

At the end of the training course the students will be able to:

- * demonstrate the ability to install, maintain and tune Daniels MT-3 radio equipment in accordance with the TIA, given the proper test equipment and documentation.
- * describe the theory behind Daniels MT-3 radio systems and how to apply that theory in practice.
- * list all of the various options and features of a Daniels MT-3 radio system.

**Course Outline:**

This course outline is flexible and will change according to the students needs.

Day One – Morning

Introductions, Housekeeping and Company Background.

Part One: The students will be introduced to Daniels MT-3 product line.

Students will follow along with the Daniels MT-3 User Guide:

Chapter 1: Introduction (Daniels Model Numbers, Frequency Bands, Oscillators)

Chapter 2: Technical Information (Wide / Narrowband, Frequency Programming)

Chapter 4: Analog System Block Diagrams (Repeater / Base Station)

Chapter 5: Radio System Components (Subrack, System Monitor, Power Amplifiers, Channel Programmer, Maintenance Tools)

Students will follow along with the Daniels Instruction Manuals:

Subrack / Motherboard: The students will be introduced to the Daniels Subrack and Motherboard which routes power, audio and control signals between all modules in a Daniels radio system.

System Monitor: The students will be introduced to the System Monitor module that is used as a voltage regulator and maintenance tool for the Daniels radio system.

Day One – Afternoon

Students will continue to follow along with the Daniels Instruction Manuals:

MT-3 Receiver: The students will be introduced to the MT-3 Receiver module. The course will cover all frequency bands (VHF AM, Lowband VHF, Highband VHF, UHF 400 MHz, UHF 800 MHz, UHF 900 MHz) and models (Crystal, Low Current Synthesized, Enhanced Synthesized) that the students are interested in.

The course will include theory of operation, options and functionality of the MT-3 Receivers three main sub modules:

Receiver Main Board

Receiver Front End

Receiver Oscillator (Crystal, Low Current Synthesizer, Enhanced Synthesizer)



Day Two – Morning

Students will continue to follow along with the Daniels Instruction Manuals:

MT-3 Transmitter: The students will be introduced to the MT-3 Transmitter module. The course will cover all frequency bands (VHF AM, Lowband VHF, Highband VHF, UHF 400 MHz, UHF 800 MHz, UHF 900 MHz) that the students are interested in.

The course will include theory of operation, options and functionality of the MT-3 Transmitters three main sub modules:

- Transmitter Main Board

- Transmitter Amplifier

- Transmitter Oscillator (previously covered during the MT-3 Receiver topic)

Control Cards: The students will be introduced to the various control cards and their operation.

Students will follow along with the Daniels MT-3 User Guide:

- Chapter 3: Analog Radio System Configurations (Repeater, Multiple Linked Repeaters, Base Station)

Students will follow along with the Technical Notes for a complete Technical overview of Daniels product line and will have the opportunity to investigate any other Daniels products in depth.

Day Two – Afternoon

Part Two: The students will be introduced to Daniels MT-3 testing, tuning and maintenance procedures.

Students will follow along with the Technical Notes for complete Daniels MT-3 Radio System Testing procedures including:

- General Set-up and Connections,

- System Monitor Testing

- Receiver Testing

- Transmitter Testing

- System Testing

The instructor will include demonstrations of Daniels testing, tuning and maintenance using a Daniels repeater / base station and an IFR 3920 Test Set. Students can follow along if they are prepared for hands-on.