



USER'S MANUAL  
FOR THE  
TRULINK®  
CF0095  
M23 & M25 ADDENDUM



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FOR THE  
TRULINK®  
CF0095  
M23 & M25 ADDENDUM

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**DOCUMENT COMPATIBILITY**

PRODUCT/PROJECT	DATE	REVISIONS/VERSIONS
CF0095	2/1/10	Initial release

**REVISION HISTORY SHEET**

REVISION	REASON FOR CHANGE	APPROVAL DATE

## FCC COMPLIANCE

*This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.*

*Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.*

*This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:*

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

## TABLE OF CONTENTS

<u>PARAGRAPH</u>	<u>TITLE</u>	<u>PAGE</u>
<b>1.</b>	<b>INTRODUCTION .....</b>	<b>1-1</b>
1.1	DEFINITIONS AND ABBREVIATIONS.....	1-1
1.1.1	Definitions of Terms Used in this Document.....	1-1
1.1.2	Abbreviations and Acronyms Used in this Document .....	1-1
<b>2.</b>	<b>TRULINK WIRELESS SYSTEM DESCRIPTION.....</b>	<b>2-1</b>
2.1	TRULINK OVERVIEW .....	2-1
2.1.1	TruLink DPT Overview .....	2-1
2.1.2	TruLink TPT Overview .....	2-1
2.1.3	Equipment List .....	2-1
<b>3.</b>	<b>TRULINK DUAL PORTABLE TRANSCEIVER (DPT).....</b>	<b>3-1</b>
3.1	OVERVIEW .....	3-1
3.2	DPT OPERATION .....	3-1
<b>4.</b>	<b>TRULINK PORTABLE TRANSCEIVER (TPT) .....</b>	<b>4-1</b>
4.1	OVERVIEW .....	4-1
4.2	TPT OPERATION .....	4-1
<b>5.</b>	<b>TRULINK MENU OPTIONS (DPT AND TPT) .....</b>	<b>5-1</b>
5.1	TRULINK MENU OPTIONS (DPT AND TPT) .....	5-1
5.1.1	Channel.....	5-2
5.1.2	Master or Slave.....	5-2
5.1.3	VOX .....	5-2
5.1.4	LED .....	5-2
5.1.5	Headset Type.....	5-2
5.1.5.1	Headset 1 Defined Parameters.....	5-3
5.1.5.2	Headset 2 Defined Parameters.....	5-3
5.1.5.3	Headset 3 Defined Parameters.....	5-4
5.1.5.4	Headset 4 Defined Parameters.....	5-4
5.1.6	External (DPT Only) .....	5-4
5.1.7	Order Synchronize Access Point .....	5-5
5.1.8	Mic Level .....	5-5
<b>6.</b>	<b>TPT OPERATION .....</b>	<b>6-1</b>
6.1	NORMAL/MONITOR MODE .....	6-1
6.2	ASTERISK BUTTON.....	6-1
<b>7.</b>	<b>DPT MODES OF OPERATION.....</b>	<b>7-1</b>
7.1	SIMPLEX OPERATION .....	7-1
7.2	DUPLEX OPERATION.....	7-1

## LIST OF TABLES

<u>TABLE</u>	<u>TITLE</u>	<u>PAGE</u>
Table 2.1.3-1	TruLink Equipment List .....	2-2
Table 5-1	Menu Options Available to DPT and TPT .....	5-1
Table 5.1.5.1-1	Headset 1 Parameters.....	5-3
Table 5.1.5.2-1	Headset 2 Parameters.....	5-3
Table 5.1.5.3-1	Peltor MT16H68FB-38 Parameters.....	5-4
Table 5.1.5.4-1	Sordin 2495P-EX Parameters.....	5-4

## CHAPTER 1

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### 1. INTRODUCTION

This document is intended to be used specifically with the CF0095 M23 and M25 configurations. See the TruLink User's guide for overall information on the TruLink® Wireless Communication System. This document will provide specific information for the set up, and operation of the CF0095-M23 and CF0095-M25 configured equipment.

#### 1.1 DEFINITIONS AND ABBREVIATIONS

##### 1.1.1 Definitions of Terms Used in this Document

- Channel                    A collection of specific frequencies that define the RF link.
- Network                   A collection of slaves and one master that form the communication group.
- Sidetone                   Users own audio heard in the user's ear.
- Other Vehicles           Refers to other platforms without TruLink DPT.

##### 1.1.2 Abbreviations and Acronyms Used in this Document

- DPT                        Dual Port Transceiver
- NiMH                      Nickel Metal-Hydride
- PTT                        Push-To-Talk button on the TPT
- SYNVOICE                Synthetic Voice (recorded voice message)
- TPT                        TruLink Portable Transceiver
- VOX                        Voice Operated Keying

## CHAPTER 2

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### 2. TRULINK WIRELESS SYSTEM DESCRIPTION

#### 2.1 TRULINK OVERVIEW

The TruLink system is a full-duplex system that permits multiple crewmembers to speak simultaneously. Unlike conventional walkie-talkies, TruLink users can converse among themselves without pressing a Push-to-Talk button or waiting for another user to finish their transmission.

The system supports 50 channels (0-49). Up to 31 crewmembers can be logged on to a channel with up to 5 simultaneously on any channel.

DPT-equipped vehicles have the capability to communicate with users on the vehicle's existing wired intercommunication system.

The system can also stand alone wireless network operation. In this case, one of the portable transceivers will act as the System Master.

Each channel requires one TruLink transceiver be set as a "Master".

##### 2.1.1 TruLink DPT Overview

The Dual Port Transceiver (DPT) is the portable TruLink access point. It is intended to act as interface to wired intercom systems and can be easily moved from vehicle to vehicle. The DPT connects to the wired intercom system's headset port via a vehicle specific interface cables. Contact Telephonics for information about the correct interface cable for a specific vehicle.

##### 2.1.2 TruLink TPT Overview

The TruLink Portable Transceiver (TPT) is the portable hand held unit in the TruLink Wireless Communication System. The operator wears the TPT along with a headset that includes headphones and a microphone to communicate with other wireless users. The TPT is usually set up as a slave in this configuration and is used in conjunction with a DPT.

##### 2.1.3 Equipment List

The following list shows the major components that are supported by this configuration. For a complete list of all the elements needed for a TruLink system, please contact Telephonics' Product Support.

**Table 2.1.3-1**  
**TruLink Equipment List**

NAME	PART NUMBER
TruLink Portable Transceiver	780-1000-001-CF0095-M25
TruLink Dual Port Transceiver	780-1000-003-CF0095-M23
PIC (Platform Interface Cable)	JB6856-Mx (Contact Telephonics for the complete list)

## CHAPTER 3

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### 3. TRULINK DUAL PORTABLE TRANSCEIVER (DPT)

#### 3.1 OVERVIEW

The Dual Port Transceiver (DPT) is the portable interface to the wired intercom systems. It can be easily moved to a different aircraft. When connected to the wired system, the DPT can work in simplex or duplex operation and is selected through a menu option. Generally the DPT is not used as a handheld device, but can be if used with the proper headset adapter cable.

When used as an interface to wired intercom systems, the DPT connects to the headset port of the crew-station via an aircraft specific Platform Interface Cable (PIC) JB6856Mx.

The DPT has only one active external audio connection.

#### 3.2 DPT OPERATION

The DPT is always operated as a MASTER. In order to change the channel a headset adaptor cable is needed. See the TruLink User's Manual for instructions on how to change channels.

The DPT connects to the wired system by the use of a platform specific Platform Interface Cable (PIC) JB6856Mx.

After ensuring the wired system is operational, plug the interface cable into the 8-pin Lemo connector on the DPT. With the DPT off, connect the other end into the ICS station.

- Set up the ICS station and turn the DPT power on.
  - If the DPT is in simplex, the DPT will create a network and log on.
  - If the DPT is in Duplex, the user will need to select "Echo Training". A tone and burst of noise should be heard in the wired system. Refer to the User's Manual or Quick Reference Guides for details.
- Verify the DPT is set to the correct channel. Refer to the User's Manual for details.
- Turn on slave TPTs and adjust system if echo is present (see the User's Manual for echo elimination procedure). System is now ready for use.

## CHAPTER 4

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### 4. TRULINK PORTABLE TRANSCEIVER (TPT)

#### 4.1 OVERVIEW

The TruLink Portable Transceiver (TPT) is the portable interface that the crewmember would carry. It is used to communicate to other crewmembers with the DPT as the Master. When commanded, it also can communicate with the wired ICS through the DPT. Generally the TPT is operated as a Slave to a DPT Master. However, it can be configured to be a Master of a network but will have no connection to a wired ICS.

The TPT connects to the headset worn by the crewmember.

The TPT has only one active external audio connection.

#### 4.2 TPT OPERATION

The TPT is generally operated as a Slave. If the user would like to operate the TPT as a Master, he or she needs to change the unit to a Master prior to logging onto a network. See the TruLink User's Manual or Quick Reference Guides for instructions on how to change from Master to Slave.

The TPT connects to a crewmember's headset with no modifications to his headset by simply plugging into the bottom of the TPT as if he or she was connecting to a wired ICS.

- Connect the TPT to the headset prior to turning on the TPT.
- Verify the TPT is on the same channel as the DPT. Refer to the User's Manual for details.

## CHAPTER 5

### 5. TRULINK MENU OPTIONS (DPT AND TPT)

Prerecorded messages (Synvoice) will prompt you through the menu options (press **M** and **release** to scroll through menu options). Once a specific menu is selected, press the Up (%) or Down (&), until the desired mode is announced and the immediately the Push-To-Talk Button (**PTT**) to set the selection (see Table 5-1).

**Table 5-1**  
**Menu Options Available to DPT and TPT**

BUTTON PRESS	MENU ITEM	DPT	TPT	AVAILABLE NOT LOGGED ON	AVAILABLE LOGGED ON
1	Channel	Yes	Yes	Yes	Yes
2	Master/Slave	Yes	Yes	Yes	Yes
3	VOX	Yes	Yes	No	Yes
4	LED	Yes	Yes	No	Yes
5	Headset Type	Yes	Yes	Yes	Yes
6	External Simplex/Duplex	Yes	No	Yes	Yes
7	Order Synchronize Access Point	No	Yes	Yes	Yes
8	Mic Level	Yes	Yes	No	Yes

#### 5.1 TRULINK MENU OPTIONS (DPT AND TPT)

Five buttons on the DPT and TPT act in similar fashion and are described in detail below. The five buttons are:

BUTTON PRESS	FUNCTION WHEN NOT IN MENU	FUNCTION WHEN IN MENU
M	Enters Menu	Selects next Menu item
%	Increase Volume	Increase through selection
&	Decrease Volume	Decrease through selection
*	Allows user to talk to wired ICS	Increase through selection
PTT	Allows user to talk to wireless users	Confirms selection of menu item selected

### 5.1.1 Channel

- Selects the Channel the TruLink wireless system will operate on.
- Available channels are 0-49.
- All users on a network must be on the same channel.

### 5.1.2 Master or Slave

- Only available before unit creates or joins a network.
- Only one Master is allowed per channel or network.
- The DPT is the default Master in a portable network.
- Any TPT can be configured to be a Master. The default is Slave.

### 5.1.3 VOX

- Only available after unit has joined a network.
- Voice operation on transmit.
- VOX ON is the default.
- VOX ON for hands-free operation.
- VOX OFF requires the operator to press PTT to transmit.

### 5.1.4 LED

- Only available after unit has joined a network.
- LED Normal is the default when unit is powered on.
- Use Normal for daylight operations.
- Use High for intense sunlight operations.
- Use NVG for operations requiring Night Vision Goggles.
- Use Time setting for 5 second delay of displaying LED off.
- Use OFF to not display LED.

### 5.1.5 Headset Type

- Headset Type 1 is the default.
- Unit will remember last selected headset when power is applied.
- Headset 1 is used for dynamic type microphones.
- Headset 2 is used for electret type microphones.

- Headset 3 is used for dynamic type microphones with more microphone sensitivity.
- Headset 4 is used for electret type microphones with more sensitivity.

### 5.1.5.1 Headset 1 Defined Parameters

**Table 5.1.5.1-1  
Headset 1 Parameters**

PARAMETER	SETTING
Mic Type	Dynamic
Mic Feed Voltage	No Mic Voltage
Mic Feed Impedance	No Impedance Enabled
Mic Sensitivity	-85.0
Mic Distortion Level	130.0
Headset Level Correction	3.0
Headset Limiter	Peak Limiter
Side tone Gain	0 dB

### 5.1.5.2 Headset 2 Defined Parameters

**Table 5.1.5.2-1  
Headset 2 Parameters**

PARAMETER	SETTING
Mic Type	Electret
Mic Feed Voltage	7.2v
Mic Feed Impedance	2k
Mic Sensitivity	-30.0
Mic Distortion Level	130.0
Headset Level Correction	6.0
Headset Limiter	Peak Limiter
Side Tone Gain	0 dB

### 5.1.5.3 Headset 3 Defined Parameters

**Table 5.1.5.3-1  
Peltor MT16H68FB-38 Parameters**

PARAMETER	SETTING
Mic Type	Dynamic
Mic Feed Voltage	NA
Mic Feed Impedance	NA
Mic Sensitivity	-61.0
Mic Distortion Level	130.0
Headset Level Correction	3.0
Headset Limiter	Peak Limiter
Side Tone Gain	0 dB

### 5.1.5.4 Headset 4 Defined Parameters

**Table 5.1.5.4-1  
Sordin 2495P-EX Parameters**

PARAMETER	SETTING
Mic Type	Electret
Mic Feed Voltage	14.4V
Mic Feed Impedance	200Ω
Mic Sensitivity	-26.0
Mic Distortion Level	130.0
Headset Level Correction	3.0
Headset Limiter	Peak Limiter
Side Tone Gain	0 dB

### 5.1.6 External (DPT Only)

- Simplex is the initial system default.
- Simplex – audio from the wireless system has priority over audio from the wired system.
  - No training required with Simplex operation

- Duplex – audio is allowed between the wired and wireless systems simultaneously.
  - Training of the DPT is required with Duplex operation.
  - The DPT retains the trained values through power cycles. It can be re-used on the same headset port again without retraining.
- The DPT retains Simplex or Duplex setting through power cycles.

### 5.1.7 Order Synchronize Access Point

- Available on TPT only.
- Used to change the channel on a TAP.
- Refer to TruLink User's Manual for more information.

### 5.1.8 Mic Level

- Adjustment allows DPT user to make headset microphone adjustments.
- Default value is Mic Level 0.
- The TPT reverts to the default settings on power up.
- Adjustment from -10 to +10 in 1dB steps.
- The (%) increases the microphone sensitivity as the value becomes more positive.
- The (&) decreases the microphone sensitivity as the value becomes more negative.

## CHAPTER 6

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### 6. TPT OPERATION

#### 6.1 NORMAL/MONITOR MODE

The TPT can be set to either Monitor or Normal mode. Once logged-on, the mode can be changed by holding down the “M” button for approximately three seconds.

##### MONITOR MODE

In Monitor mode, full duplex conversations may be conducted between wireless users. If the DPT is connected to a wired intercom system, then the wired users will also be heard by the wireless users. To speak to the wired users, the TPT user would press the asterisk button (Push-to-Talk).

If the DPT is set for Simplex mode (see below) then wired users would not be heard while the TPT user presses the asterisk button.

##### NORMAL MODE

In Normal mode, wired users always hear the wireless conversations. It is not necessary for a TPT user to press a button to be heard by the wired users.

If the DPT is set for Simplex mode (see below) then the TPT users would not hear the wired users whenever any TPT users speak.

The TPT defaults on power up to the Monitor mode.

#### 6.2 ASTERISK BUTTON

The Asterisk button (\*) on the TPT is used as a Push-to-Talk to the wired intercom system when the TPT is in the Monitor mode.

## CHAPTER 7

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### 7. DPT MODES OF OPERATION

The two modes of operation, Simplex and Duplex, are described in the following paragraphs.

#### 7.1 SIMPLEX OPERATION

The DPT determines the mode of operation for the network and can be changed through the menu system. The initial default mode of operation is Simplex. When in this mode, the wireless users will hear the wired ICS on their TPTs; however if a TPT user decides to communicate with the wired ICS then wireless users will not hear the wired ICS during this time. The audio from the DPT toward the wired ICs has priority over audio from the wired ICS.

To use the system in this mode the user simply connects the DPT as follows:

- Connect the DPT to a headset using the CC6857-M7 cable.
- Connect the DPT to the appropriate PIC cable.
- Connect the cable to the wired ICS and power up ICS.
- Power up the DPT and verify channel, unit will create a network.
- Power up TPT and verify the channel, unit will log onto network.
  - Wireless users talk to other wireless users by using VOX communications or PTT button.
  - Wireless users talk to other wireless users and the wired ICS by using the “\*” key. The key must be held the entire time the user is speaking (Push-to-Talk).
  - The user must release the button to hear audio from the wired ICS.

#### 7.2 DUPLEX OPERATION

The DPT determines the mode of operation for the network and can be changed through the menu system. To use duplex operation the user must select it from the menu.

When in this mode, audio between wired and wireless users can occur simultaneously. This is what makes the system a duplex operation

To use the system in this mode the user connects the DPT as follows:

- Connect the DPT to a headset using the CC6857-M7 cable.
- Connect the DPT to the appropriate PIC cable.
- Connect the cable to the wired ICS and power up ICS.
- Power up the DPT and verify channel, unit will create a network.

- Select Duplex from the menu of the DPT and select.
  - Unit will announce “Duplex External”.
- Verify the ICS that the DPT is connected to is set to a volume of fifty percent and that the crew station is set to hot mic.
- Select Echo training from the menu of the DPT.
  - Any one on the wired ICS will hear a 1 kHz tone and a white noise. The DPT will then store these values.
- Power up TPT and verify the channel, unit will log onto network.
  - Wireless users talk to other wireless users by using VOX communications or PTT button.
  - Wireless users talk to other wireless users and the wired ICS by using the “\*” key. The key must be held the entire time the user is speaking.
- If echo is heard by wireless users, lower the volume on the ICS just until the echo is eliminated.