



NG-001-C003-RDMS-R00B
07 January 2015

RDMS IPU OPERATOR'S USER MANUAL for Combat Training Center - Instrumentation System (CTC-IS)



Under:

Contract No.: W900KK-09-D-0342-0002
CDRL No.: C003

Prepared for:

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Program Executive Office (PEO)
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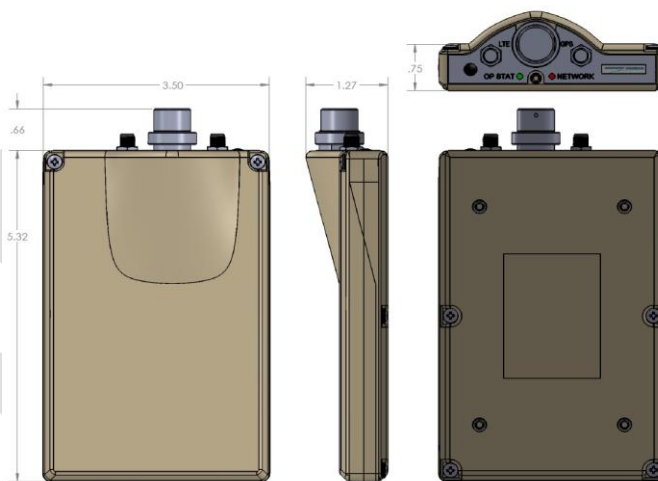
OPERATOR'S USER MANUAL

FOR

COMBAT TRAINING CENTER – INSTRUMENTATION SYSTEM (CTC-IS)

RANGE DATA MEASUREMENT SUBSYSTEM (RDMS)

INSTRUMENTED PLAYER UNIT (IPU)



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DRAFT

WARNING SUMMARY

This warning summary contains general safety warnings and hazardous materials warnings that you must understand and apply during operations and maintenance of this equipment. Failure to observe these precautions could result in serious injury or death to personnel. Also included are explanations of safety and hazardous materials icons used within the technical manual.

FIRST AID DATA

For first aid treatment, refer to FM 4-25.11.

EXPLANATION OF SAFETY WARNING ICONS



EXPLOSION – Rapidly expanding symbol shows that the material may explode if subjected to high temperatures, source of ignition, or high pressure.



HEAVY OBJECT – Human figure stooping over heavy object shows physical injury potential from improper lifting technique.



HEAVY PARTS – Foot with heavy object on top shows that heavy parts can crush and harm.



HEAVY PARTS – Hand with heavy object on top shows that heavy parts can crush and harm.



HOT AREA – Hand over object radiating heat shows that part is hot and can burn.

GENERAL SAFETY WARNINGS DESCRIPTION

WARNING



The lithium ion batteries used in RDMS IPU equipment may emit flame and/or smoke and get extremely hot if damaged or punctured.

Do not dispose of any batteries by fire or incineration. They can explode causing personnel injury. Disposal should be in accordance with local authority regulations.

WARNING



Some objects covered in this manual are heavy and need two men to lift them.

The equipment items used in HITS training exercises are heavy and can crush if dropped on personnel causing serious injury. Keep feet clear of area when lifting and handling the equipment items.

WARNING



The equipment items used in RDMS IPU training exercises are heavy and can easily crush fingers or hands causing serious injury. Keep hands and fingers clear of pinch points when working with the loose equipment items.

WARNING



Ensure cables have been secured to equipment preventing entanglement of clothing or equipment that may result in equipment damage.

EXPLANATION OF HAZARDOUS MATERIALS ICONS



HOT AREA – Hand over object radiating heat shows that part is hot and can burn.

List of Effective Pages / Work Packages

Content will be added after IPVT (excluding pocket TMs and publications with less than eight pages).

DRAFT

OPERATOR'S USER MANUAL
FOR
COMBAT TRAINING CENTER – INSTRUMENTATION SYSTEM (CTC-IS)
RANGE DATA MEASUREMENT SUBSYSTEM (RDMS)
INSTRUMENTED PLAYER UNIT (IPU)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve these procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms), located in the back of this manual directly to: Commander, Program Executive Office, Simulation, Training, and Instrumentation, (PEO STRI), ATTN: PEO-SFAE-STRI-PS-Q, 12350 Research Parkway, Orlando, FL 32826-3276. You may also send your recommended changes via electronic mail. Our e-mail address is PEOSTRI_2028@us.army.mil. A reply will be furnished to you.

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HOW TO USE THIS MANUAL

OVERVIEW

This manual contains operation information for the COMBAT TRAINING CENTER – INSTRUMENTATION SYSTEM (CTC-IS) Range Data Measurement Subsystem (RDMS) Instrumented Player Unit (IPU) developed for the Program Executive Office for Simulation, Training and Instrumentation (PEO STRI).

The purpose of the Instrumented Player Unit (IPU) Operator's Manual is to instruct the operator how to set up and operate IPU's for the performance of training exercises.

WRITING CONVENTIONS

This manual uses the following writing conventions:

Boldface - Indicates something on which or with you are to perform an action as directed within a procedure. For example:

- The text of a menu or title of a button
- A program object or other thing in user interface
- A stylus or a combination of keys on keyboard

Navigation Instructions - Appear in boldface and include menu titles of labels of other program features.

Numbered Lists - Include components or procedural steps for completing a task.

Lettered Lists - Include more components or more detailed, procedural sub-steps for completing a task.

ORGANIZATION

This manual contains operation and maintenance information for Instrumented Player Units (IPU) crew and is divided into the following sections:

Warning Summary includes first aid data and an explanation of all general safety warning icons and hazardous materials icons used in the manual.

List of Effective Pages and Work Packages is a list of all pages or work packages that have been changed, added, deleted or superseded and includes current change numbers.

Table of Contents is a list of Chapters, Tasks, Figures and Tables in order of appearance.

Chapter 1. General Information, Equipment Descriptions and Theory of Operation provides information for a system overview including hardware and software descriptions of the training

system, with information of how the components work and what their capabilities are. This chapter also provides preparation information for the operation of the system, which includes operator roles and responsibilities as well as controls and indicators of the equipment.

Chapter 2. Operator Instructions shall describe the operations Instrumented Player Units (IPU) operator is authorized to perform. Procedures and supporting illustrations shall be presented so that the crew can prepare the system for operation, identify and locate operational controls and indicators, and operate Instrumented Player Units (IPU) safely and efficiently in both usual and unusual conditions.

Chapter 3. Troubleshooting Procedures provide instructions to perform all required maintenance at the operator maintenance level. It explains what action the operator can perform when the system or a system component fails. Troubleshooting is presented using malfunctions, indications and corrective actions. Corrective actions reference maintenance tasks to restore system operation to normal.

Chapter 4. Maintenance Instructions provide Preventive Maintenance Checks and Services (PMCS) to assure an operator that the system is in exercise training capable status.

Chapter 5. Supporting Information provides a Reference work package listing all publications referenced in the operator's manual that are required by the user to operate or maintain the equipment. This chapter also includes a Components of End Item (COEI) and Basic Issue Items (BII) Lists WP that serves as an inventory for IPU equipment to ensure safe and efficient operation. Also included is an Expendable and Durable Items List WP that provides the user with a list of all expendable and durable items cited in the technical manual text that are necessary to operate or maintain the equipment.

Rear Matter includes blank copies of DA Form 2028 as well as an authentication page provided by PEO STRI.

CHAPTERS AND WORK PACKAGES

This manual is organized using Chapters. All chapters contained in the manual are listed in the table of contents in the order they appear.

OPERATION

Before you use an Instrumented Player Units (IPU), familiarize yourself with the operating instructions and perform preventive maintenance checks and services as directed. Be aware of **WARNINGS**, **CAUTIONS** and **NOTES**.

CHAPTER 1
GENERAL INFORMATION, EQUIPMENT DESCRIPTION
AND
THEORY OF OPERATION
FOR
RANGE DATA MEASUREMENT SUBSYSTEM (RDMS)
INSTRUMENTED PLAYER UNIT (IPU)

OPERATOR INSTRUCTIONS**RANGE DATA MEASUREMENT SUBSYSTEM (RDMS) INSTRUMENTED PLAYER UNIT (IPU)****GENERAL INFORMATION**

SCOPE

This technical manual contains the theory of operation, operating instructions, and supporting information for the Range Data Measurement Subsystem (RDMS), hereafter commonly referred to as RDMS. The RDMS includes Instrumented Player Units (IPU) for vehicles and dismounted soldiers. The RDMS IPU includes GPS modules to facilitate position reporting. The RDMS IPU shall interface with Tactical Engagement Simulation Systems (TESS) and pass data between the TESS equipment worn by soldiers and vehicles to and from the Core Instrumentation System (CIS) via the network infrastructure. All RDMS IPU configuration settings shall be programmable over the air (OTA).

Table 1. RDMS IPU Configurations

Equipment Name	Part Number
Dismounted IPU	165061
Vehicle IPU	165061

MAINTENANCE FORMS, RECORDS, AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by (as applicable) DA PAM 750-8, The Army Maintenance Management System (TAMMS) Users Manual; DA PAM 738-751, Functional Users Manual for the Army Maintenance Management Systems - Aviation (TAMMS-A); or AR 700-138, Army Logistics Readiness and Sustainability.

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR) AND PRODUCT QUALITY DEFICIENCY REPORTS (PQDR)

If your equipment needs improvement, let us know. Send us an Equipment Improvement Recommendation (EIR). You, the user, are the only one who can tell us what you do not like about your equipment. Let us know why you do not like the design or performance. The easiest and fastest way to report problems or suggestions is by submitting your information using an SF 368 (Product Quality Deficiency Report). You can send your SF 368 via regular mail, use the address specified in the Distribution Statement on the cover of this manual. We will send you a reply.

CORROSION PREVENTION AND CONTROL (CPC)

Corrosion prevention and control of Army materiel is a continuing concern. It is important that any corrosion problems with this item be reported so that the problem can be corrected and improvements

can be made to prevent the problem in future items. Corrosion specifically occurs with metals. An electrochemical process causes the degradation of metals. It is commonly caused by exposure to moisture, acids, bases, or salts. An example is the rusting of iron. Corrosion damage in metals can be seen, depending on the metal, as tarnishing, pitting, fogging, surface residue, and/or cracking. Plastics, composites, and rubbers can also degrade. Degradation is caused by thermal (heat), oxidation (oxygen), solvation (solvents), or photolytic (light, typically ultraviolet) processes. The most common exposures are excessive heat or light. Damage from these processes will appear as cracking, softening, swelling, and/or breaking. SF Form 368, Product Quality Deficiency Report should be submitted to the address specified in DA PAM 750-8, TAMMS Users Manual.

OZONE DEPLETING SUBSTANCES (ODS)

Information regarding Ozone Depleting Substances (ODS) was not available for this draft. The content of this paragraph will be determined at a later date.

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

Destruction of Army electronics material to prevent enemy use will be in accordance with the requirements of TM 750-244-2, Procedures for Destruction of Equipment to Prevent Enemy Use (Electronics Command), 03 December 2007.

PREPARATION FOR SHIPPING OR STORAGE

General

Remove all batteries from equipment before storage or shipment. Ruptured cells will spill corrosive chemicals into electronic circuits. RDMS IPU equipment will be properly packed in accordance with procedures listed in the RDMS Maintenance Manual before placing in storage. All PMCS listed in the RDMS IPU operators manual will be completed prior to storage.

Special Procedures

Note that under extreme climatic conditions, corrosion-preventive compounds, moisture barriers, and/or desiccant material may be required. Before placing the equipment in administrative storage, perform operational checks and make necessary repairs. When removing equipment from administrative storage, perform an operational check to assure operational readiness. Always remove batteries prior to storage or shipment.

Administrative Storage

Administrative storage is the placement of organic equipment in a limited care and preservation status for short time periods, with reviews every six (6) months to re-evaluate the requirements.

Equipment placed in storage must be capable of being restored to a working state within 24 hours. Ensure that only equipment rated OPERATIONALLY READY is placed in storage. For further definition, refer to AR 750-1.

NOMENCLATURE CROSS-REFERENCE LIST

Table 2. Nomenclature Cross-Reference List

Instrumented Player Unit (IPU)
Dismount Kit
Vehicle Kit
Transit Case
RDMS Gateway
Instrumented Player Unit (IPU) Software

WARRANTY INFORMATION

Information regarding warranties was not available for this draft. The content of this paragraph will be determined at a later date.

LIST OF ABBREVIATIONS/ACRONYMS

Table 3. List of Abbreviations and Acronyms

CTC-IS	Combat Training Center – Instrumentation System
RCS	Range Communication System
RDMS	Range Data Measurement Subsystem
IPU	Instrumented Player Unit
TESS	Tactical Engagement Simulation System
BIT	Built In Test
MILES	Multiple Integrated Laser Engagement System
VDC	Volts Direct Current
WITS	Wireless Independent Target System
TAFF	Tactical Analysis Feedback Facility
IWS	Instrumented Weapon System

SAFETY, CARE, AND HANDLING

Dismounted Kits:

Caution: Care should be taken when handling the dismounted kit, which can weigh up to four pounds. Do not drop on hands and or feet while installing the RDMS IPU and battery into the dismounted pouch.

Mounted Kits:

Care should be taken when affixing the RDMS IPU, pouch and cables onto military vehicles. Extreme care should be taken when connecting and disconnecting power cable to military vehicles. Power connectors may vary from vehicle to vehicle and may include 28 VDC auxiliary connectors and or dome light

receptacles. These varied connection techniques may heighten the risk of shorting power and grounding circuits which can cause electrical shock injuries or death to the user.

FCC STATEMENTS:

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.

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.

Changes or modifications not expressly approved by InHand Electronics Inc. could void the user's authority to operate the equipment.

This equipment has been shown to comply with FCC exposure limits set forth for an uncontrolled environment when installed and operated with minimum distance of 25 mm between the radiator and the human body, which is maintained when the device is operated while operated within the custom backpack/pouch.

OPERATOR INSTRUCTIONS

RANGE DATA MEASUREMENT SUBSYSTEM (RDMS) INSTRUMENTED PLAYER UNIT (IPU)

EQUIPMENT DESCRIPTION AND DATA

EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

The Range Data Measurement Subsystem (RDMS) consists of an Instrumented Player Unit (IPU) and the accessories at the Combat Training Centers for installation on vehicles and dismounted soldiers. The RDMS IPU provides instrumentation to allow the location of the players to be known while participating in a training exercise rotation. The RDMS IPU includes GPS modules to facilitate position reporting. The RDMS IPU interfaces with Tactical Engagement Simulation Systems (TESS) and passes data between the TESS equipment worn by soldiers and mounted on vehicles to and from the Core Instrumentation System (CIS) via the network infrastructure. All RDMS IPU configuration settings are programmable over the air (OTA).

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

Major Components of RDMS

The major components of the RDMS are presented in Figure 1 below. The components are the RDMS Instrumented Player Unit (IPU), the Dismount Kit, the Vehicle kit and the transit case. Also shown are the two software components that complete the RDMS subsystem (the RDMS Gateway and the RDMS IPU Software).

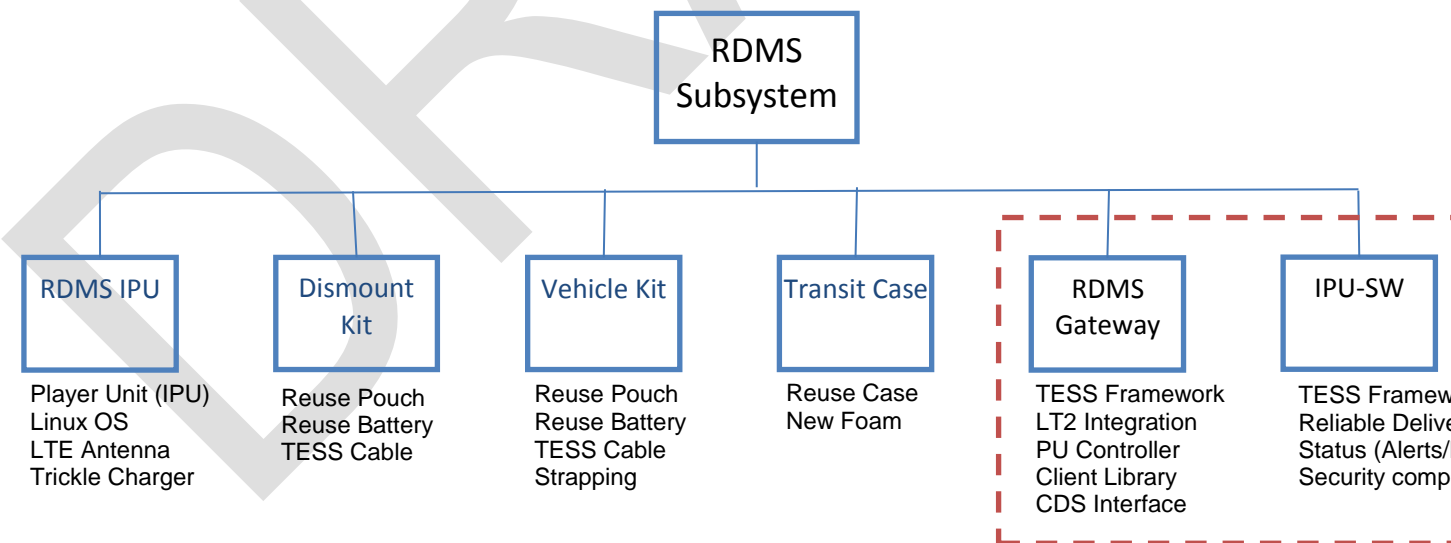


Figure 1. RDMS Subsystem Components

Major Components of IPU

The major components of the IPU are presented in Table 4 below.

Table 4. RDMS IPU Components

Item
RDMS IPU
Linux OS
LTE Antenna
Trickle Charger

EQUIPMENT DATA

Range Data Measurement Subsystem (RDMS) Instrumented Player Unit (IPU)

The RDMS IPU provides instrumentation for the Players to allow the location of the players to be known while participating in the training exercise rotation.

Table 5 presents the IPU functions.

Table 5. RDMS IPU Functions

RDMS Functions	Details
LTE 4g	Internal antenna and external connection
GPS	Internal antenna and external connection
PAN	2.4 GHz, IEEE 802.15.4 radio
Power	Filtered 9V – 18VDC
Configurable	Over the Air (OTA)
Update rate	1 second to 60 minutes, 3 to 100 meters (1 sec), configurable Over the Air (OTA)
Alerts	Report to network when 6 hours of battery remains
Position Accuracy	Horizontal (in each dimension) shall be 2.4 meters Root Mean Square (RMS) and vertical position accuracy shall be 4.8 meters RMS.
Configuration	Retain configuration settings between battery exchanges.
Identification	Bar Code and RFID
Built In Test (BIT)	Run at Power up, report ID and BIT results (Itself and interfaces) and location to the Core Instrumentation System via the RCS
Visual indicators	Battery Charge, Network connectivity, power on/off, and operational status
Multifunction Button	3 seconds = Diagnostics mode, 8 seconds = Hard Reset (Reboot)

Figure 2 provides the physical dimensions and views of the IPU.

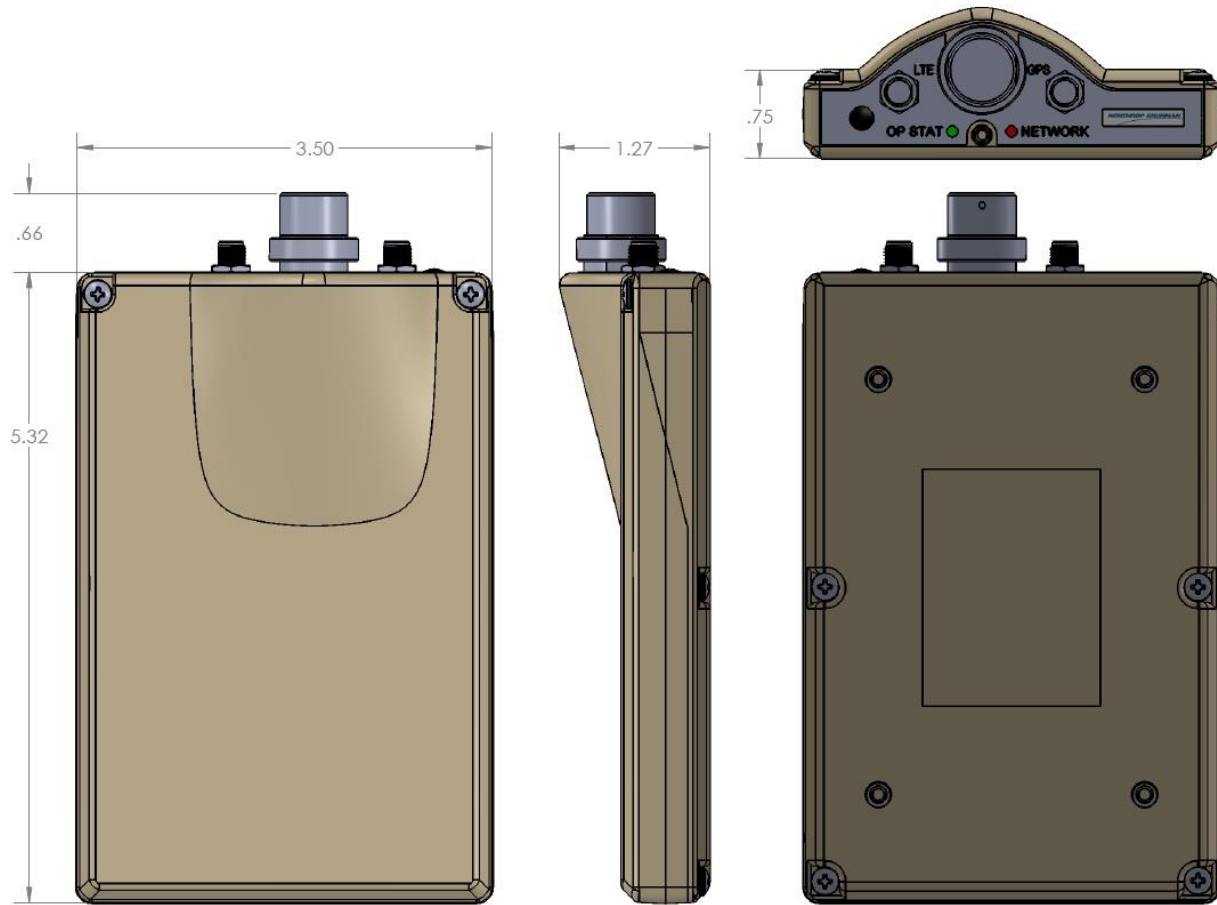


Figure 2. RDMS IPU Dimensions and Views

RDMS IPU Interfaces

The RDMS interfaces to mounted and dismounted systems and components for the Tactical Engagement Simulation Systems (TESS) and Multiple Integrated Laser Engagement System (MILES) as prescribed in the interface control drawings as specified in Table 6 below.

Table 6. MILES ICDs

MILES/I-MILES TESS	ICD
MILES XXI (Threshold)	MILXXI-TS-0014 Rev – B
MILES 2000 (Threshold)	ICD 3357-001 Rev B
I-MILES IWS (Threshold)	ICD 3262-001
MILES ITS (Threshold)	ICD200426C
MILES WITS (Threshold)	ICD 200428A
Digger Warning Unit (DWU)	ICD 290013 Rev – 6 May 2005
CV-TESS	TBD
TVS	TBD

The RDMS IPU Dismount Kit

THE RDMS Dismount Kit consists of an Instrumented Play Unit (IPU), a Pouch, a PATCO Battery, and a IPU Interface Cable.

Table 7. RDMS IPU Dismount Kit Components

Item
RDMS IPU Dismount Kit
Dismount Pouch
MILES Cable

The RDMS IPU Dismount Pouch

The Dismount Kit reuses existing cases/pouches (Table 8 provides physical dimensions of the pouch). An image of the IPU Dismount Pouch is provided in Figure 3 below.

Table 8. RDMS IPU Dismount Pouch Characteristics

Item	Characteristic
Dimensions	5.32"x 3.52" x .75" (14 cubic inches)
Connector	Connector bump is 1.28'
Comparison	Fits within a 2 magazine ammo pouch



Figure 3. RDMS IPU Dismount Pouch showing the PATCO Battery

The RDMS IPU PATCO Battery

The PATCO Battery is an existing battery for use in supporting instrumentation devices at the Combat Training Centers. The characteristics of the PATCO Battery are provided in table below.

Table 9. PATCO Battery Characteristics

Characteristic	Range
Battery part number:	PATCO PB-LW-01
Voltage Range:	10.0V min.; 14.8V nom.; 16.8V max.
Nominal Capacity:	9.6 Ah @ 500mA @ 23°C (74°F)
Maximum Discharge:	5.0 A continuous @ 23°C (74°F)
Maximum Pulse Discharge	7.5 A for 5 seconds @ 23°C (74°F)
Energy:	142 Wh
Weight:	998 grams (2.2 lbs.)
Operating Temp:	-20° C to 60° C (-4°F to 140°F)
Storage Temp:	-20° C to 60° C (-4°F to 140°F)
Connector:	LEMO HEN.1F.305.XLNP
Mating Connector:	LEMO FGN.1F.305.YLC
Charging:	Charge at constant voltage of 16.8 Volts in a temperature range of 0°C to 45°C, limiting current to 3.0 A max, at 23°C, until current declines to 200 mA.
Communication:	SMBus v1.1 communication protocol
State of Charge Indicator:	LCD Displays

**Figure 4. PATCO Battery****RDMS IPU MILES Cable**

The MILES cable connects the RDMS IPU and the PATCO battery within the dismounted MILES system. The RDMS IPU MILES cable plug P1 connects to the RDMS IPU main connector, Plug P2 connects to the PATCO Battery and Plug P3 connects to the MILES system. Figure 5 shows the MILES cable. A typical

connection is depicted in Figure 6 below. The RDMS IPU has external connectors for an External GPS Antenna and an External LTE Antenna. When the operational necessity exists, cables and external antennas will be provided for those functions. Figure 7 illustrates typical MILES equipment and connections.



Figure 5. RDMS IPU MILES Cable

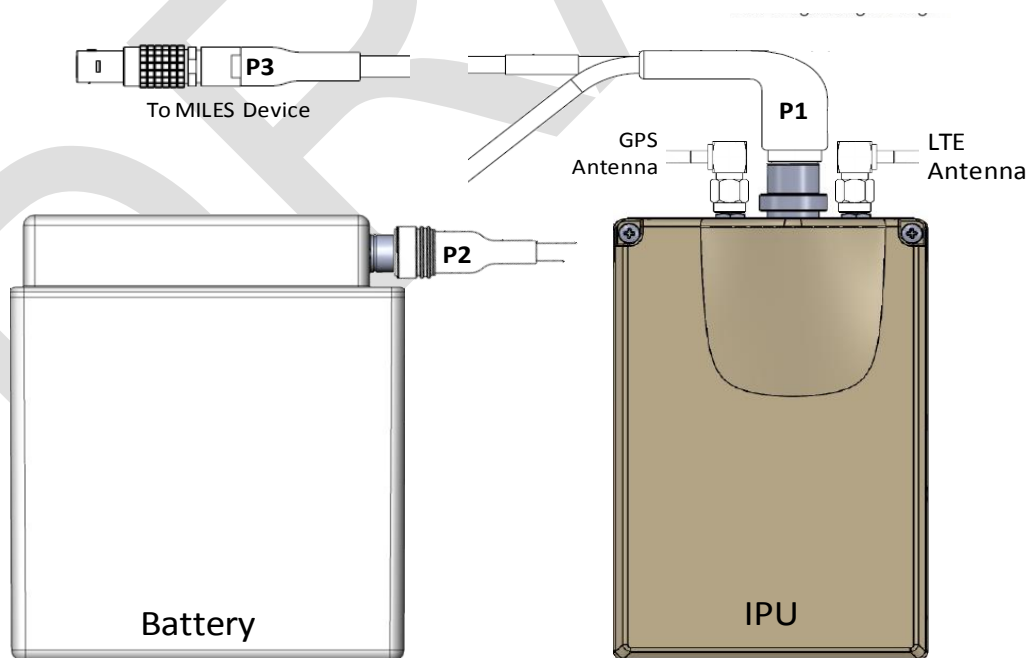


Figure 6. RDMS IPU and Battery Connection



Figure 7. Typical MILES Equipment and Connections

RDMS IPU Vehicle Mounting Kit

The RDMS IPU Vehicle Mounting Kit consists of an Instrumented Player Unit (IPU), a pouch, a PATCO Battery, a TESS/Battery/IPU Interface Cable, and Velcro strapping.

Instrumented Player Unit (IPU)

The RDMS IPU is described in the above paragraphs.

Vehicle Pouch

The RDMS IPU Vehicle Pouch reuses existing cases/pouches (Figure 8 provides an image of the pouch). A Velcro strap is utilized to mount the pouch containing the IPU and Battery to the vehicle.



Figure 8. RDMS IPU Vehicle Pouch Showing the RDMS IPU and PATCO Battery

The RDMS IPU PATCO Battery

The characteristics of the PATCO Battery are provided in Table 9 above.

TESS Cable

The TESS cable interfaces the RDMS IPU to numerous military vehicle types. Table 10 below reflects the interfaces and the number of vehicles for each interface.

Table 10. Interface Types and Number of Vehicle Types

MILES Type	Number of associated Vehicles	Reference
MILES II with RVDD	3 vehicle types	
MILES XXI	11 vehicle types	
MILES 2000	4 vehicle types	
ITS	13 vehicle types	
WITS	24 vehicle types	
MILES II with RVDD	3 vehicle types	

Strapping

Strapping is provided to enable the User to affix the RDMS IPU Mounted Pouch to military vehicles. The strapping will vary based upon the type of terrain of the employment of the mounted system. Desert terrain allows the user to simply attach the mounted components to the vehicle to prevent a bouncing action to dislodge the components. However, in the CTC-IS forested environment, more care has to be used to affix the mounted components to prevent the components from being dislodged from the vehicle with overhanging limbs of trees and overgrown vegetation.

RDMS IPU Transit Case

The mounted and dismounted kits are housed in a transit case for storage and ease of removal for the Instrumentation Issue and Recover (IIR) process. The mounted kits are removed from the MILES warehouse in the transit cases and then installed by the CTC technicians at the IIR location. The dismounted kits are issued to the units in transit cases and distributed by the player unit. Figure 9 shows a depiction of transit cases in the warehouse.



Figure 9. Transit Cases in the MILES Warehouse

OPERATOR INSTRUCTIONS

RANGE DATA MEASUREMENT SUBSYSTEM (RDMS) INSTRUMENTED PLAYER UNIT (IPU)

THEORY OF OPERATION

SYSTEM THEORY

Instrumented Player Unit (IPU)

The RDMS includes Instrumented Player Units (IPU) for installation on vehicles and dismounted soldiers. The IPU includes GPS modules to facilitate position reporting. The IPU interfaces with the TESS and passes data between the TESS equipment worn by soldiers and mounted on vehicles to and from the Core Instrumentation System (CIS) via the network infrastructure. All IPU configuration settings are programmable over the air.

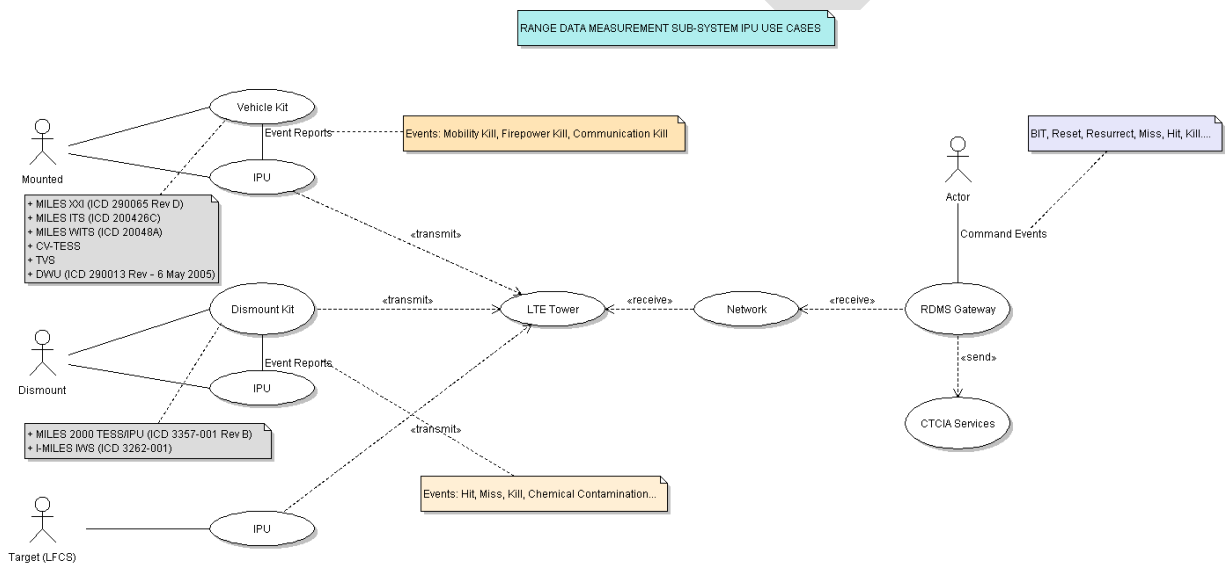


Figure 10. RDMS IPU Communication Configuration

IPU Reporting

- The reporting rate is over the air configurable via a CIS command based on combination of elapsed time and distance traveled, from 1 second to 60 minutes and 3 to 100 meters with a maximum reporting rate of once per second.
- The IPU supports configurable reporting rates based on CIS generated configurable tracking control regions.
- The IPU reports TESS, TSPI, control, and status data and supports the RDMS capability to automatically detect and retransmit lost event messages.

- Latency between the IPU and CIS (CTIA PU Gateway) applications is:
 - 1.8 seconds or less for IPU generated event data.
 - 2 seconds or less for all administrative and control commands, and CTIA subscribed events.

IPU Indicators

The IPU provides visual indications of battery charge, network connectivity, power on/off, and operational status.

IPU Interface

The IPU supports interfaces to TESS equipment (see Table 11 below).

Table 11. MILES ICDs

MILES/I-MILES TESS	ICD
MILES XXI (Threshold)	MILXXI-TS-0014 Rev – B
MILES 2000 (Threshold)	ICD 3357-001 Rev B
I-MILES IWS (Threshold)	ICD 3262-001
MILES ITS (Threshold)	ICD200426C
MILES WITS (Threshold)	ICD 200428A
Digger Warning Unit (DWU)	ICD 290013 Rev – 6 May 2005
CV-TESS	TBD
TVS	TBD

Personal Area Network Standard (PAN)

The IPU supports communication with the Personal Area Network (PAN).

IPU Interface Kits

The RDMS includes interface kits to permit use of the IPU in dismount and vehicle mounted configurations.

Dismount Kit

- The dismount kit reuses existing cases/pouches. IPU's are contained in fabric cases/pouches consistent and compatible with soldier man worn vests and other dismount configurations.
- The dismount kit includes a rechargeable battery for powering the IPU.
- The dismount kit including IPU, carrying pouch, antennas, cables, and battery weighs less than 4 pounds.

- The physical mounting of the IPU is designed not to interfere with or degrade the normal mission capabilities of the instrumented player or impede the carrying, movement and functioning abilities of the individual or crew in conducting training.

Vehicle Kit

- Universal-mounting kits support the TESS vehicle configurations. The mounting mechanisms and brackets are designed with the objective of maximum commonality among vehicle platforms.
- The physical mounting of the IPU is designed to not interfere with the user, operation, and maintenance of the host platform, nor degrade the normal mission capabilities of the instrumented player. No permanent modifications to the vehicles or weapon systems are required.
- The vehicle kit includes everything required to physically secure and interface the IPU to the weapon/vehicle platforms.
- The time required for one person to perform mounting and system check-out of the IPU is designed to be 60 minutes or less. The time required for one person to perform mounting and system check-out of the IPU is designed to be 30 minutes or less.
- The vehicle kit includes a rechargeable battery for powering the IPU independent of the TESS.
- Vehicle kits include a trickle charging system that maintains IPU battery charge when receiving power from the TESS or vehicle. The charging system also protects the vehicles and TESS from current sags, surges, and transients resulting from the interface.
- Vehicle kits include interface cabling to connect to NATO slave power receptacles and vehicle dome lights (for use when installed on vehicles where the TESS does not have the capability of feeding vehicle power).

Event Storage

- The IPU records and time-stamps all engagement results and all changes of player status to include TSPI.
- The IPU stores a minimum of the last 2000 time-tagged RTCA and TSPI data.
- The IPU provides an OTA event memory clear function to allow only exercise control and RMCS network personnel to clear the event memory.

Built In Test (BIT)

The IPU executes BIT upon power-up, report its ID, and BIT results for itself and interfaces, and its position to the CIS via the RCS.

Instrumentation Issue and Recovery (IIR)

The RDMS provides a capability to support IIR to assist in building a Battle Roster and transferring it into the CIS manually and support recovery of the IPU equipment at the end of the exercise. Each IPU is configured with an optical code or Radio Frequency Identification (RFID) tag to facilitate inventory management and timely equipment distribution/collection correlation to vehicles, individual weapons and Soldiers.

The IPU provides a capability to support automated IIR as well as assist in an automated method of building a Battle Roster and inserting it into the CIS.

IPU Configuration

The IPU retains configuration settings between battery exchanges.

Global Positioning System (GPS)

The IPU includes a GPS receiver to calculate TSPI data and transmit to the CIS.

IPU Batteries

IPUs are powered by rechargeable batteries approved for use by the U.S. Army Communications and Electronics Command (CECOM).

IPU Battery Interfaces

The IPU battery interfaces to the IPU in a manner that facilitates replacement within the existing space constraints.

IPU Battery Power and Alerts

- The IPU provides alerts to the Network Management Subsystem when battery capacity reaches a minimum of 6 hours of battery life remaining.
- The IPU worn by an individual has a minimum of 72 hours operating time at a maximum 30 second update rate.
- Without vehicle power, IPU batteries used in vehicle kits are designed to have a life of 48 hours at a maximum five second update rate.

IPU Battery Chargers

The RCS has a battery charging capability to charge up to 1/3 of the on-hand IPU dismount kit batteries in 48 hours for a complete 14-day exercise rotation.

CHAPTER 2
OPERATOR INSTRUCTIONS
FOR
RANGE DATA MEASUREMENT SUBSYSTEM (RDMS)
INSTRUMENTED PLAYER UNIT (IPU)

OPERATOR INSTRUCTIONS

RANGE DATA MEASUREMENT SUBSYSTEM (RDMS) INSTRUMENTED PLAYER UNIT (IPU)

CONTROLS AND INDICATORS

DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS

Information regarding the description and use of operator controls and indicators was not available for this draft. The content of this paragraph will be determined at a later date.

OPERATOR INSTRUCTIONS

RANGE DATA MEASUREMENT SUBSYSTEM (RDMS) INSTRUMENTED PLAYER UNIT (IPU)

OPERATION UNDER USUAL CONDITIONS

OPERATION UNDER USUAL CONDITIONS

Mounted: The mounted kits are removed from the MILES warehouse in the transit cases, assembled at the IIR Facility, and then installed by the CTC technicians as the Player vehicles enter the Instrumentation Installation and Return (IIR) facility. Upon installation of the kits on the player vehicles, property accountability is performed and the data base synchronization of the equipment to the players' vehicles is accomplished to complete the Reception, Staging, Onward moving and Integration (RSOI) process.

Dismounted: The Dismounted Kits are issued to the player units in transit cases where property accountability is accomplished and then the kits are distributed by the player unit.

Security Measures for Electronic Data

There are no specific procedures at the RDMS IPU operation level that impact the security aspects of the CTC-IS system. The Instrumentation data provided by the RDMS IPU is viewed in a high side (Classified) environment; however, there are no controls that permit the user to influence the high side system.

Site Requirements

Information regarding site requirements was not available for this draft. The content of this paragraph will be determined at a later date.

Assembly and Preparation for Use

Dismounted:

The RDMS IPU is inserted into the pouch and connected to the battery and to the MILES Gear. Power is applied and the RDMS IPU Boots up and engages the RCS Network, reports the ID number, BIT status, and Interface status. The Combat Trainer responsible for the player unit must confirm the connection to the Operations Group before the unit is declared to be functioning correctly. The Operations Group must be able to successfully issue the Kill and resurrect commands to the instrument prior to completion of the process.

Mounted:

The RDMS IPU mounted pouch is installed onto the vehicle and the power cable is connected to the vehicle power outlet (Aux connector or Dome light socket). Power is applied and the RDMS IPU Boots up and engages the RCS Network, reports the ID number, BIT status, and Interface status. The

installation technician must confirm the connection to the Operations Group before the unit is declared to be functioning correctly. The Operations Group must be able to successfully issue the Kill and resurrect commands to the instrument prior to completion of the process.

Initial Adjustments, Before Use and Self Test

There are no adjustments before use and Self Test. Upon power up, the RDMS IPU boots up and connects to the Range Management Control System (RMCS) Network, reports the RDMS IPU unique ID number, the RDMS IPU BIT status, and RDMS IPU Interface status.

Operating Procedures

The operating procedure is to install the RDMS IPU Pouch (with IPU inside), apply the power connector, and perform the Players normal duties in support of the training rotation. There are no other specific operating procedures for the RDMS IPU. The dismounted User wears the device in the carrying pouch and the mounted User has the carrying pouch strapped to the vehicle.

RDMS IPU States:

The RDMS IPU User can observe that the RDMS IPU has two states (Initialization and Operation).

The RDMS IPU enters the Initialization state when the user connects the power connector to the unit. In the Initialization State, the RDMS IPU indicators provide the User with a green OP Status and the Network indicator is not illuminated as shown in Table 12 and Figure 11 below.

Table 12. RDMS IPU Initialization State

Indicator	Status
OP STATUS LED	Green
NETWORK LED	Off



Figure 11. RDMS IPU Initialization State

Once the RDMS PU connects to the RMCS LTE Network, the RDMS IPU is in the Operational State and the Network indicator is illuminated to indicate that the network connection was successful.

When the Operating system is successfully loaded, the RDMS enters the Operational State (see Table 13). The Operational indicators provide the user with a green OP Status and a green Network indicator as shown in Figure 12 below.

Table 13. RDMS Enters the Operational State

Indicator	Status
OP STATUS LED	Green
NETWORK LED	Green



Figure 12. RDMS IPU Operational State

RDMS IPU Operational Modes

The RDMS IPU has two modes of operation: Normal Mode and the Diagnostic Mode with a Reboot function.

Normal Mode

In the Normal mode of operation, the RDMS IPU is connected to the LTE RMCS and provides location information to the Core Instrumentation System (CIS) to track (Instrument) the movement of the dismounted or mounted entities. An accelerometer inside the RDMS IPU monitors the RDMS IPU activity.

Diagnostic Mode

The Diagnostic mode provides an interface that allows a technician to troubleshoot RDMS IPU operations in the event of a BIT failure. The RDMS IPU enters the Diagnostic Mode when the Multi-

Function Button is depressed for 3 seconds. The Diagnostic mode indicators provide the user with an Amber OP Status and the Network indicator is not illuminated as is shown in the Figure 13 below.

Table 14. Diagnostics Mode Indicators

Indicator	Status
OP STATUS LED	Amber
NETWORK LED	n/a



Figure 13. RDMS IPU Diagnostics Mode

Reboot: The RDMS IPU will perform a hard (non-graceful) reset when the Multi-Function button is held for more than 8 seconds. The reset allows a User to reboot without having to disconnect (recycle) power.

Operating Auxiliary Equipment

There is no Auxiliary equipment associated with the RDMS IPU.

Preparation for Movement

Preparation for movement of the RDMS IPU is the insertion of the RDMS IPU into either the mounted or dismounted pouch.

OPERATION UNDER UNUSUAL CONDITIONS

Unusual Environment / Weather

The RDMS IPU is designed to be used inside the mounted and or dismounted pouch which provides a layer of protection from the elements. The RDMS IPU design also provides a sealed case for the electronics of the device which will protect the device from the elements and water immersion.

Degraded operation procedures

There are no degraded modes of operation and therefore, no procedures for operating the RDMS in a degraded mode.

DRAFT

CHAPTER 3
TROUBLESHOOTING PROCEDURES
FOR
RANGE DATA MEASUREMENT SUBSYSTEM (RDMS)
INSTRUMENTED PLAYER UNIT (IPU)

OPERATOR INSTRUCTIONS**RANGE DATA MEASUREMENT SUBSYSTEM (RDMS) INSTRUMENTED PLAYER UNIT (IPU)**

TROUBLESHOOTING PROCEDURES

INTRODUCTION

Troubleshooting for the RDMS IPU is divided into the dismounted and mounted configurations of the RDMS IPU. Each configuration has variances that preclude a single troubleshooting process to support. The troubleshooting starts with a description of each configuration followed by the troubleshooting table for each configuration.

MALFUNCTION/SYMPTOM INDEX

The purpose of the Malfunction/Symptom Index is to provide a listing of equipment faults and/or indications and reference the appropriate work package to perform the necessary troubleshooting procedures. Perform the troubleshooting and corrective action as described.

RDMS IPU Dismounted Configuration

The RDMS IPU is connected to the PATCO Battery and to the MILES Gear (Figure 14). The RDMS IPU communicates with the RMCS Network over the LTE 4G Cellular communications connected to towers positioned at the Training Center to provide coverage. Fiber optic cable connects the towers to the Operations Center which allows the center to track the location and status of the MILES gear.

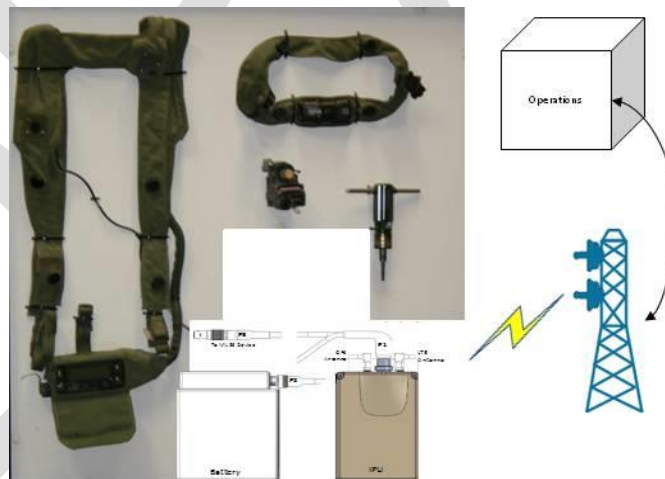


Figure 14. RDMS IPU Dismounted Configuration

Table 15 below provides troubleshooting symptoms as well as potential causes and corrective actions for the Dismounted IPU configuration.

Table 15. RDMS IPU Dismounted Configuration Troubleshooting Chart

Symptom	Cause	Corrective Item
No RDMS IPU Amber Light when the Battery is connected to the RDMS IPU	Battery is not charged	Charge the battery
No RDMS IPU Amber Light when the Battery is connected to the RDMS IPU	Battery is not charged	Replace battery
No RDMS IPU Green light after Amber light extinguishes at power on.	IPT did not transition to the NG Software.	Replace the RDMS IPU
RDMS IPU OP STATUS Light is green and the Network light does not turn Green after xx seconds after power up.	The LTE connection of the RDMS IPU to the RMCS network did not occur	Replace the RDMS IPU and repeat the power on process
The RDMS IPU does not reboot after 8 second depression on the Multifunction Button.	The multifunction button or the software is malfunctioning	Replace the RDMS IPU
The God Gun kills the MILES Gear but the Operations Center cannot confirm the Kill activity over the LTE network	The RDMS IPU is not communicating with the Operations Center	Replace the RDMS IPU
The God Gun resurrects the MILES Gear but the Operations Center cannot confirm the resurrect activity over the LTE network	The RDMS IPU is not communicating with the Operations Center	Replace the RDMS IPU
The Operations Center reports that the RDMS IPU is reporting less than 6 minutes of Battery remaining on the RDMS IPU External Power source (PATCO Battery).	The PATCO Battery has less than 6 minutes of power remaining	Replace the PATCO Battery
The Operations Center reports to the Combat Trainer that the Instrumented player location is not being received (Reported).	The RDMS IPU is not reporting the Players location to the Operations Center	Reset the RDMS IPU and confirm with the Operations Center that the RDMS IPU is reporting location correctly

Table 16 below provides troubleshooting symptoms as well as potential causes and corrective actions for the mounted IPU configuration.

Table 16. RDMS IPU Mounted Configuration Troubleshooting Chart

Symptom	Cause	Corrective Item
The vehicle power is on and the WITS Power Convertor has power with RDMS IPU Plug P3 connected to the WITS Power Convertor and Plug P1 is connected to the RDMS IPU. The RDMS IPU is connected to the PATCO Battery Plug P2 and the OPSTATUS light is not illuminated on the RDMS IPU.	The RDMS IPU Is not receiving power from the WITS Power Convertor.	Replace the RDMS IPU, Replace the Power Cable
The vehicle power is on and the WITS Power Convertor has power with RDMS IPU Plug P3 connected to the WITS Power Convertor and Plug P1 is connected to the RDMS IPU. The RDMS IPU Plug P2 is connected to the PATCO Battery and the RDMS IPU OPSTATUS light is Amber but the battery is not receiving a charge from the RDMS IPU.	The Battery is not showing an indication of trickle charge from the RDMS IPU.	Replace the Battery, Replace the RDMS IPU, Replace the cable
The vehicle power is off and the WITS Power Convertor has power with RDMS IPU Plug P3 connected to the WITS Power Convertor and Plug P1 is connected to the RDMS IPU. The RDMS IPU is connected to the PATCO Battery Plug P2 and the OPSTATUS light is not illuminated on the RDMS IPU but the battery is not receiving a charge from the RDMS IPU.	The Battery is providing power to the RDMS IPU.	Replace the Battery, Replace the cable
Vehicle and WITS power convertor power is on but No RDMS IPU Amber Light when the WITS Power convertor Plug P3 is connected to the RDMS IPU Plug P2.	The RDMS IPU is not receiving power from the WITS Power Convertor.	Replace the RDMS IPU, Replace the Cable
No RDMS IPU Green light after Amber light extinguishes at power on.	IPT did not transition to the NG Software.	Replace the RDMS IPU.
RDMS IPU OP STATUS Light is green and the Network light does not turn Green after xx seconds after power up.	The LTE connection of the RDMS RDMS IPU to the RMCS network did not occur.	Replace the RDMS IPU and repeat the power on process.

Symptom	Cause	Corrective Item
The RDMS IPU does not reboot after an 8 second depression on the Multifunction Button.	The multifunction button or the software is malfunctioning.	Replace the RDMS IPU.
The God Gun kills the MILES Gear but the Operations Center cannot confirm the kill activity over the LTE network.	The RDMS IPU is not communicating with the Operations Center.	Replace the RDMS IPU.
The God Gun resurrects the MILES Gear but the Operations Center cannot confirm the resurrect activity over the LTE network.	The RDMS IPU is not communicating with the Operations Center.	Replace the RDMS IPU.
The Operations Center reports that the RDMS IPU is reporting less than 6 minutes of Battery remaining on the RDMS IPU External Power source (PATCO Battery).	The WITS Power convertor or vehicle power is off and the PATCO Battery has less than 6 minutes of power remaining.	Replace the PATCO Battery.
The Operations Center reports to the Combat Trainer that the vehicle location is not being received (Reported).	The RDMS IPU is not reporting the vehicle location to the Operations Center.	Reset the RDMS IPU and confirm with the Operations Center that the RDMS IPU is reporting location correctly, Replace the RDMS IPU

RDMS IPU Mounted Configuration

The RDMS Mounted configuration (Figure 15) consists of the Mounted MILES Gear (TESS, WITS, IWS) that is connected to the power plug P3 that provides power to the RDMS IPU through Plug P1. The RDMS IPU then provides a trickle charge to the PATCO Battery through plug P2. The PATCO battery provides power to the RDMS IPU when the vehicle power is turned off. The RDMS IPU communicates with the RMCS Network over the LTE 4G Cellular communications connected to the towers positioned at the Training Center to provide coverage. Fiber optic cable connects the towers to the Operations Center which allows the center to track the location and status of the MILES gear.

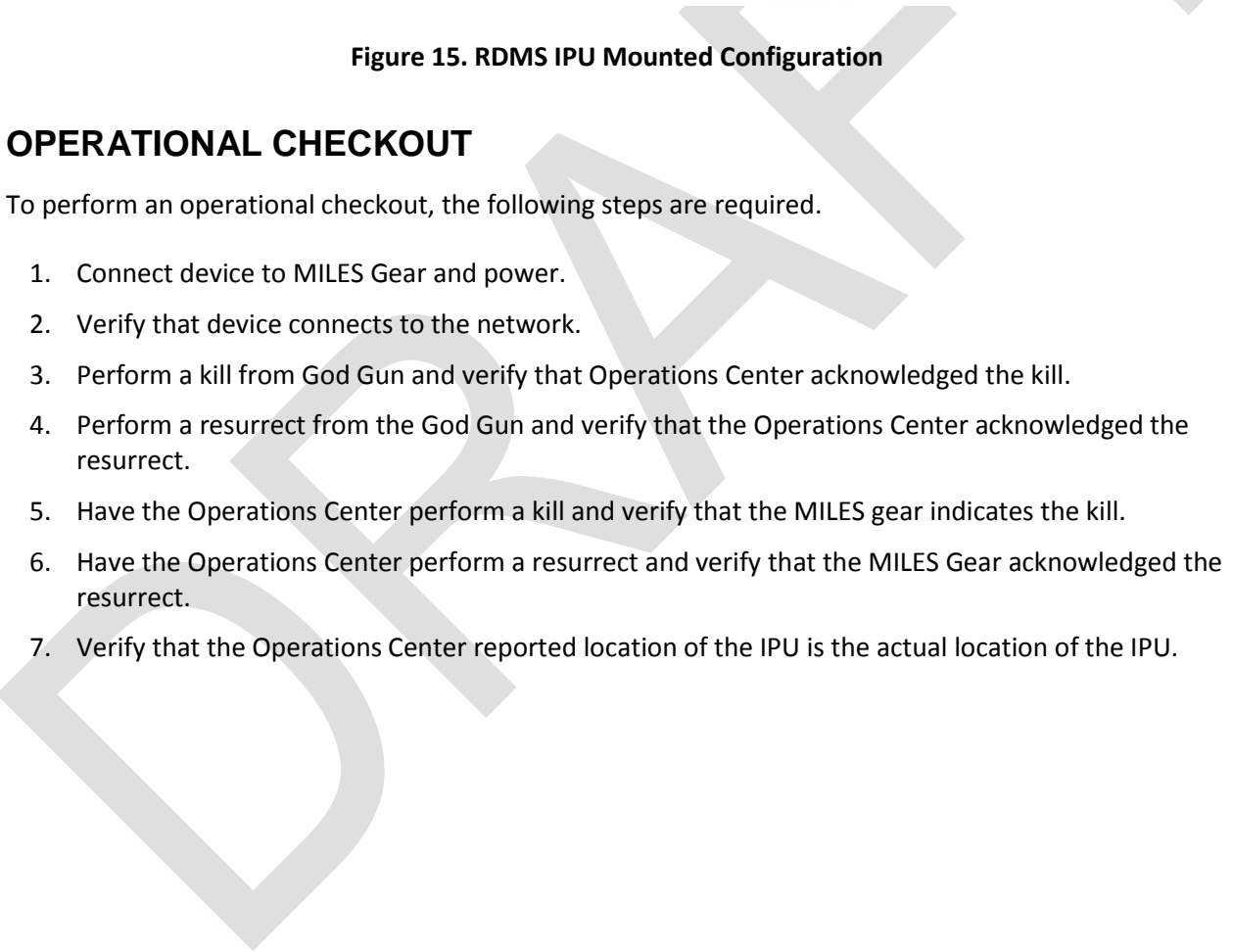


Figure 15. RDMS IPU Mounted Configuration

OPERATIONAL CHECKOUT

To perform an operational checkout, the following steps are required.

1. Connect device to MILES Gear and power.
2. Verify that device connects to the network.
3. Perform a kill from God Gun and verify that Operations Center acknowledged the kill.
4. Perform a resurrect from the God Gun and verify that the Operations Center acknowledged the resurrect.
5. Have the Operations Center perform a kill and verify that the MILES gear indicates the kill.
6. Have the Operations Center perform a resurrect and verify that the MILES Gear acknowledged the resurrect.
7. Verify that the Operations Center reported location of the IPU is the actual location of the IPU.

CHAPTER 4
MAINTENANCE INSTRUCTIONS
FOR
RANGE DATA MEASUREMENT SUBSYSTEM (RDMS)
INSTRUMENTED PLAYER UNIT (IPU)

OPERATOR INSTRUCTIONS

RANGE DATA MEASUREMENT SUBSYSTEM (RDMS) INSTRUMENTED PLAYER UNIT (IPU)

SERVICE UPON RECEIPT

SERVICE UPON RECEIPT (FIELD LEVEL ONLY)

Service Upon Receipt Tasks

Information regarding service upon receipt tasks was not available for this draft. The content of this paragraph will be determined at a later date.

Service Upon Receipt of Materiel

Information regarding service upon receipt of material was not available for this draft. The content of this paragraph will be determined at a later date.

Installation Instructions

Information regarding service upon receipt installation instructions was not available for this draft. The content of this paragraph will be determined at a later date.

EQUIPMENT / USER FITTING INSTRUCTIONS

Information regarding equipment/user fitting instructions was not available for this draft. The content of this paragraph will be determined at a later date.

OPERATOR INSTRUCTIONS

RANGE DATA MEASUREMENT SUBSYSTEM (RDMS) INSTRUMENTED PLAYER UNIT (IPU)

SERVICE UPON RECEIPT

PMCS INTRODUCTION

Preventative Maintenance Checks and Services (PMCS) for the RDMS IPU are services that need to be performed on a scheduled basis to assure the continual successful operational status of the RDMS IPU.

PMCS for the Combat Training Centers – Instrumentation System (CTC-IS) is restricted to the periods of time between the training rotations. The RDMS IPU devices will be in storage before the training rotations and after the training rotations. Therefore, the only opportunity to perform PMCS is at the issue and or recovery process.

Each RDMS IPU needs to be inspected completely during the issue and recovery activities.

PMCS, INCLUDING LUBRICATION INSTRUCTIONS

Information regarding PMCS lubrication instructions was not available for this draft. The content of this paragraph will be determined at a later date.

OPERATOR INSTRUCTIONS

RANGE DATA MEASUREMENT SUBSYSTEM (RDMS) INSTRUMENTED PLAYER UNIT (IPU)

MAINTENANCE

RDMS IPU DISMOUNTED CONFIGURATION MAINTENANCE

Maintenance Tasks for the RDMS IPU Dismounted Configuration

Figure 16 below depicts the dismounted configuration for the RDMS IPU.

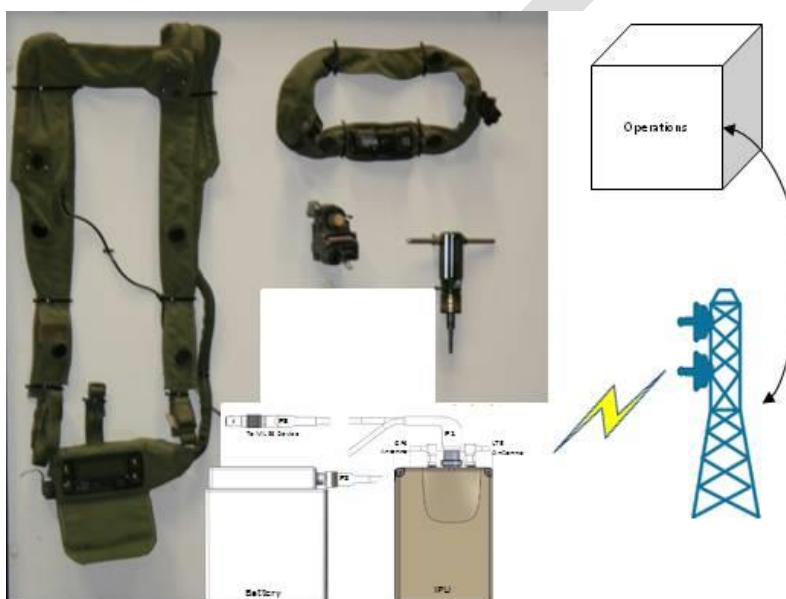


Figure 16. RDMS IPU Dismounted Configuration

The maintenance tasks identified in this document are for the operational maintenance tasks.

Inspect

The RDMS IPU must be inspected for serviceability at each issue and recovery event. Items for physical inspection include broken or dented cases, LEDs, connectors, switches, etc.

Test

The RDMS IPU should be tested utilizing the self BIT feature whenever a problem is suspected. Hold the button down for 3 consecutive seconds for the BIT function.

Service

The RDMS IPU does not require routine servicing, however, it does use an external power source and when running off of DC/battery power, the battery must be charged.

Removal

To remove the RDMS IPU, the following steps are required.

1. Open the Pouch.
2. Disconnect Plug P2 from the PATCO Battery.
3. Disconnect Plug P3 from the MILES system.
4. Disconnect Plug P1 from the RDMS IPU.

NOTE

The plug P1 is a push pull type connector and no twisting action is required to disengage P1 from the RDMS IPU as indicated in the following figure.

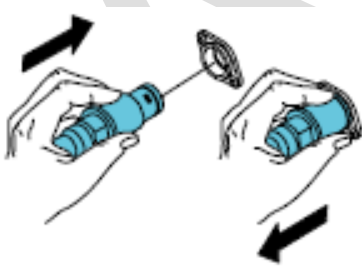


Figure 17. Push Pull Connector Action

5. Remove the RDMS IPU from its container/pouch/box.
6. Place the RDMS IPU into the protective container for storage.

Installation and Checkout

1. Select a RDMS IPU from its storage container (see Figure 18).

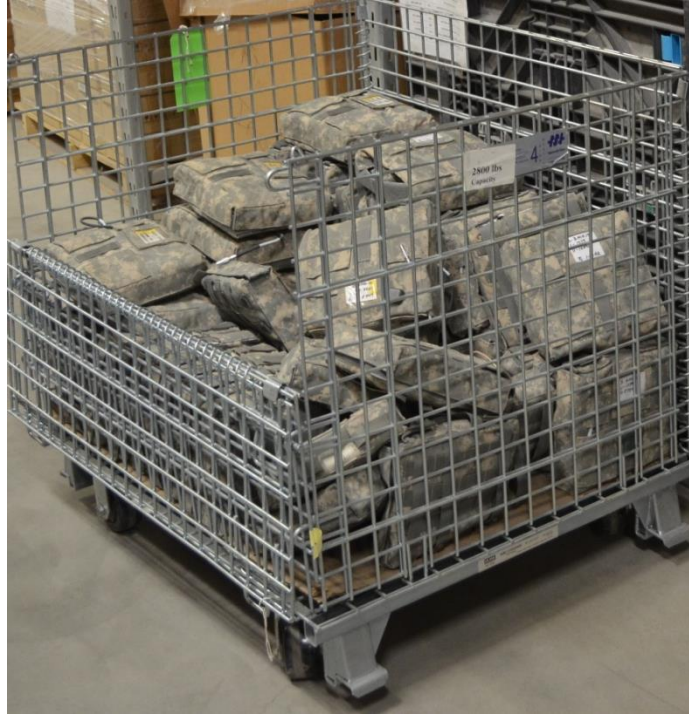


Figure 18. RDMS IPU Storage Container

2. Select a PATCO Battery.
3. Select a set of MILES gear.
4. Inspect the RDMS IPU for damage and completion.
5. Connect the RDMS IPU MILES cable plug P1 to the RDMS IPU main connector as shown in Figure 17 above.

NOTE

The plug P1 is a push pull type connector and no twisting action is required to disengage P1 from the RDMS IPU as indicated in the following figure.

6. Connect Plug P3 to the MILES system.
7. Connect Plug P2 to the PATCO Battery. Figure 19 depicts the IPU wiring connections configuration.

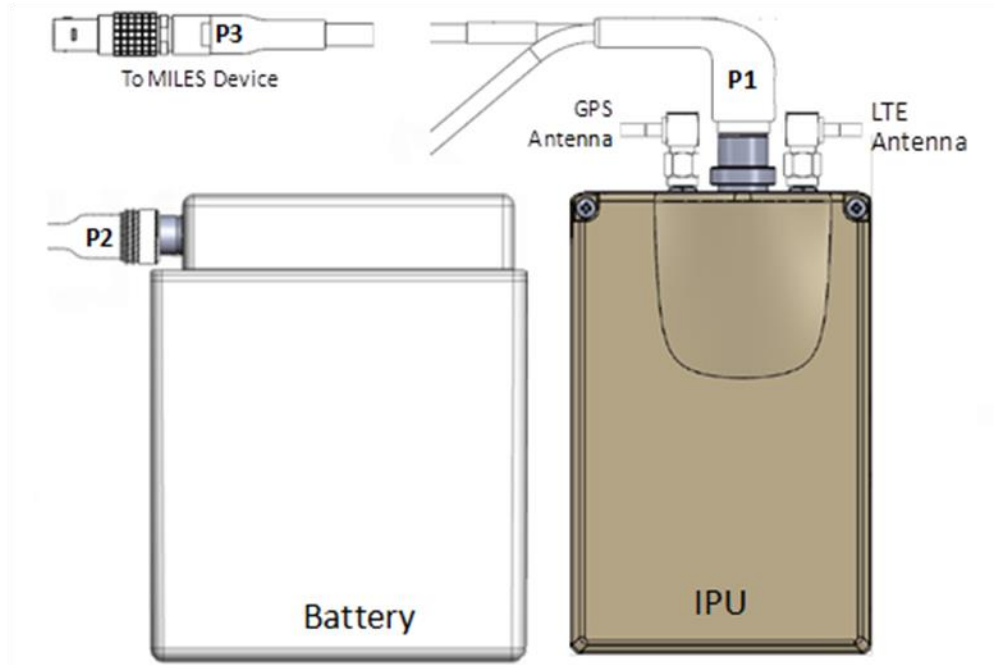


Figure 19. RDMS IPU Connections

8. Observe the Indicators to ensure that the RDMS IPU enters the operational state (OP STATUS indicator Green and Network Indicator Green) as shown in Figure 20 below.



Figure 20. RDMS IPU Operational State

9. Place the RDMS IPU into the Pouch.
10. Place Harness on the Player per Figure 21 below.



Figure 21. RDMS IPU and MILES Harness on the Player

11. The Combat Trainer will use a God Gun to engage the MILES harness to Kill the Gear.
12. Confirm that the Kill State (four flashes) showed on the MILES harness and that the Kill was observed by the Operations Center.
13. Use the God Gun to resurrect the MILES Gear.
14. Confirm that the Resurrect activity (one flash) showed on the MILES harness and that the Resurrect was correctly observed by the Operations Center. Figure 22 provides MILES Kill information during Player participation.

TYPE OF HIT/KILL	NUMBER OF KSI FLASHES	AUDIBLE INDICATION
Vehicle		
Shoulder-Mounted Assault Weapon (SMAW) Spotting Rifle	1 Flash	None
Near Miss	2 Flashes	Near Miss
Hit	4 Flashes	Hit
Mobility Kill	4 Flashes	Hit, Mobility, Stop Vehicle. (The crew has 20 secs to bring the vehicle to a stop.)
Fire Power Kill	4 Flashes	Hit, Fire Power
Communications Kill	4 Flashes	Hit, Commo Kill. (Disables external communications only).
Catastrophic Kill	Flashes Continuously	Vehicle Kill
Administrative Kill	Flashes Continuously	Vehicle Kill
Cheat Kill	Flashes Continuously	Cheat Kill
Reset/Resurrect	1 Flash	Reset/Resurrect
IWS		
Near Miss	N/A	2 Beeps
Kill	N/A	Continuous
Administrative Kill	N/A	Continuous
Cheat Kill	N/A	Continuous
Reset/Resurrect	N/A	4 Beeps
<p>Notes: Cheat Kill will occur during a Mobility Kill if the vehicle does not stop within the allotted 20 seconds or moves after it has stopped. A Cheat Kill will occur when disconnecting any of the following pieces of vehicle equipment: Kill Status Indicator (KSI), any Detector Belt/Array, or Power Controller (must be reconnected for cheat to be indicated), or removing the battery on IWS Console (DPCU).</p> <p>The KSI is issued as part of a separate equipment kit.</p> <p>In the event of a Catastrophic or Communications Kill, external communications can be overridden for EMERGENCIES ONLY by pressing the USER INFO push button on the Control Unit, selecting communications override and pressing the ENTER push button.</p>		

Figure 22. MILES Kill Indication Chart

The installation of the dismounted RDMS IPU is complete.

The RDMS IPU has external connectors for an External GPS Antenna and an External LTE Antenna. When the operational necessity exists, cables and external antennas will be provided for those functions.

Replacement

1. Follow dismounted removal procedures above.
2. Follow dismounted installation and checkout procedures above.

Repair

If a RDMS IPU failure is suspected, press and hold the multi-function button for 3 consecutive seconds and check to see if the LED light illuminates. If yes, then continue to troubleshoot the problem by checking the connector. If the connector is suspect, change the connector. If the RDMS IPU still does not power up, then remove and replace the RDMS IPU per procedures above.

Pack

The RDMS IPU should be packaged and kept in a dry, dust free container while not in use.

Unpack

Remove the RDMS IPU from its storage container and inspect for defects prior to installation.

Prepare for use

Unpack the RDMS IPU from its container and ensure that the connector pins are not bent or loose prior to installation.

Assemble

The RDMS IPU should not be assembled by the user (assembly is only by certified repair technicians).

Disassemble

The RDMS IPU should not be disassembled by the user (disassembly is only by certified repair technicians).

Clean

The RDMS IPU should be kept dry and dust free as much as possible. Clean the RDMS IPU with a dry/lint free cloth. Caution: Do not use corrosive cleaning solutions on the RDMS IPU. If required, use a damp cloth only and then dry the RDMS IPU with a dry/lint free cloth.

Nondestructive inspection

Not applicable.

Place in service

The RDMS IPU will be placed into service at the Combat Training Centers (CTC). The number of RDMS IPU devices placed into service for each rotation will be based upon the needs of the Training rotations and number of Player units required to support.

Maintenance Tasks for the RDMS IPU Mounted Configuration

Figure 23 below depicts the mounted configuration for the RDMS IPU.

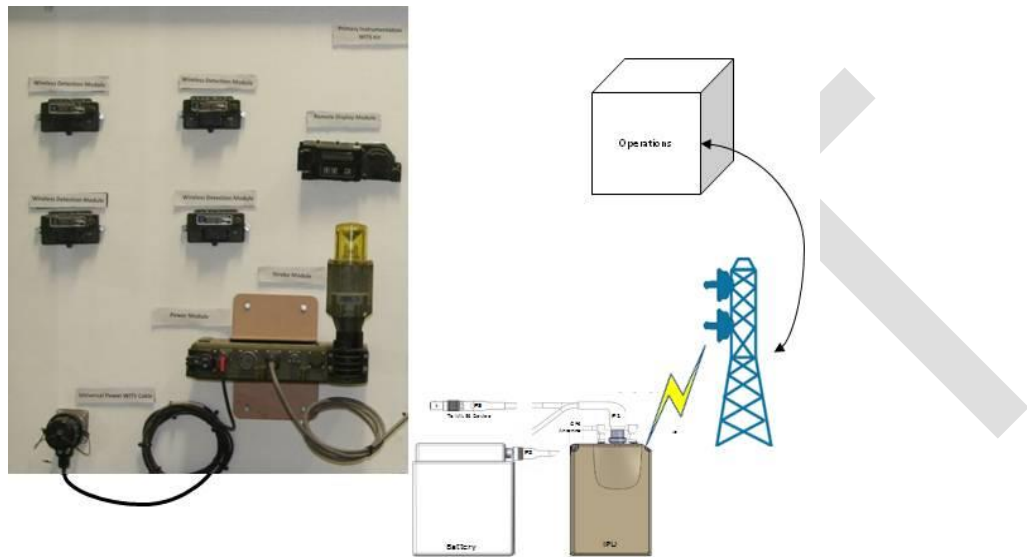


Figure 23. RDMS IPU Mounted Configuration

The RDMS IPU should be tested utilizing the self BIT feature whenever a problem is suspected. Hold the button down for 3 consecutive seconds for the BIT function.

Service

The RDMS IPU does not require routine servicing, however, it does use an external power source and when running off of DC/battery power, the battery must be charged.

Remove

To remove the RDMS IPU, the following steps are required.

1. Remove the pouch from the vehicle, open the pouch.
2. Disconnect Plug P2 from the PATCO Battery.
3. Disconnect Plug P3 from the WITS Power Converter.
4. Disconnect Plug P1 from the RDMS IPU as shown in Figure 24 below.

NOTE

The plug P1 is a push pull type connector and no twisting action is required to disengage P1 from the RDMS IPU as indicated in the following figure.

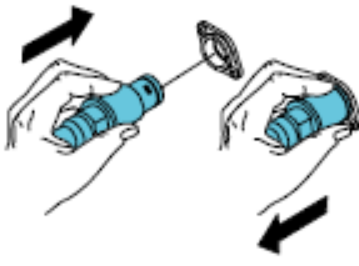


Figure 24. Push Pull Connector Action

5. Remove the RDMS IPU from its container/pouch/box.
6. Place the RDMS IPU into the protective container for storage.

Installation and Checkout

1. Select a RDMS IPU from its storage container (see Figure 25).

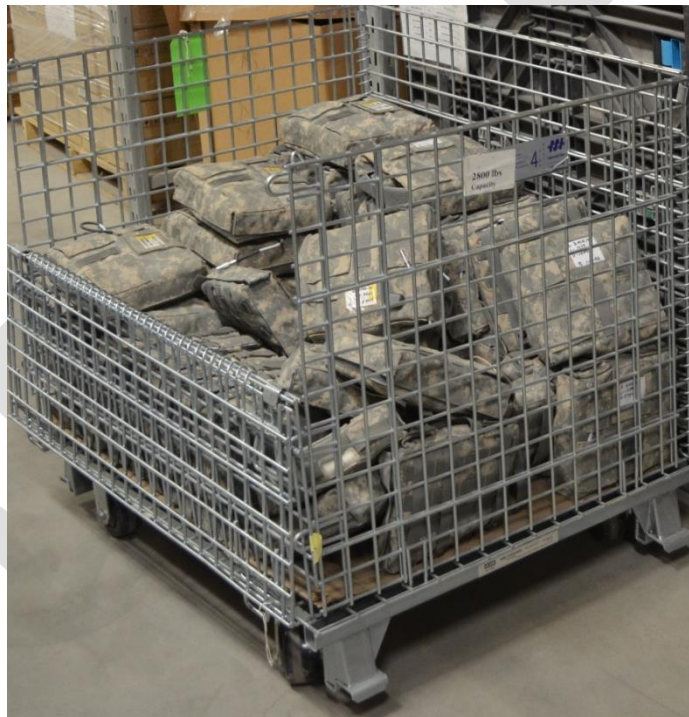


Figure 25. RDMS IPU Storage Container

2. Select a PATCO Battery.
3. Inspect the RDMS IPU for damage and completion.
4. Connect the RDMS IPU MILES cable plug P1 to the RDMS IPU main connector as shown in Figure 24 above.

NOTE

The plug P1 is a push pull type connector and no twisting action is required to disengage P1 from the RDMS IPU as indicated in the following figure.

5. Connect Plug P3 to the MILES system.
6. Connect Plug P2 to the PATCO Battery. Figure 26 depicts the IPU mounted wiring connections configuration.

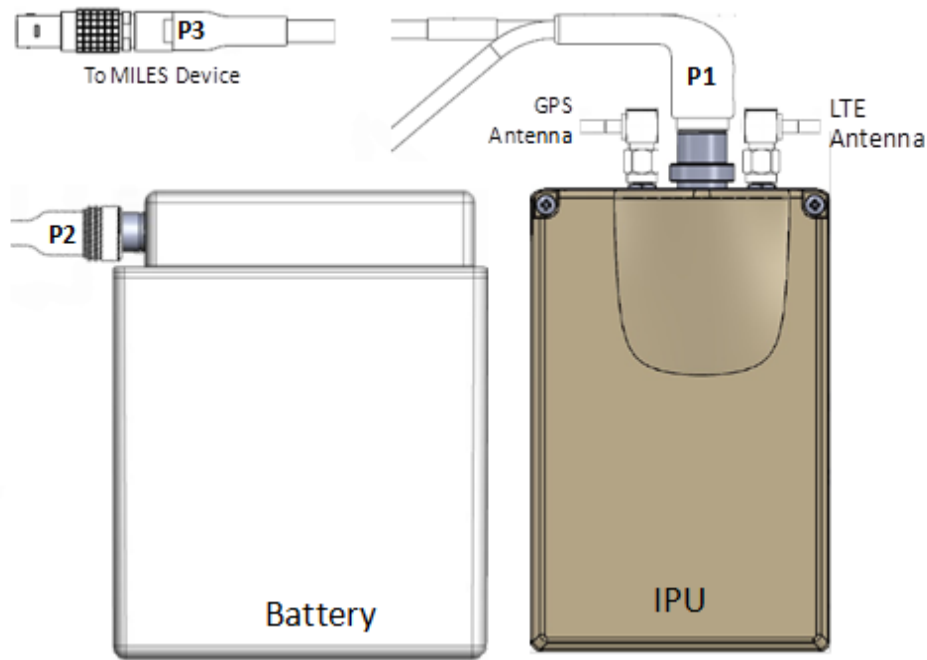


Figure 26. RDMS Mounted IPU Connections

7. Observe the Indicators to ensure that the RDMS IPU enters the operational state (OP STATUS indicator Green and Network Indicator Green) as shown in Figure 27 below.



8. Place the RDMS IPU into the Pouch.
9. Mount IPU pouch on vehicle with straps.
10. The Combat Trainer will use a God Gun to engage the MILES to Kill the vehicle.
11. Confirm that the Kill State (four flashes) showed on the MILES harness and that the Kill was observed by the Operations Center.
12. Use the God Gun to resurrect the MILES Gear.
13. Confirm that the Resurrect activity (one flash) showed on the MILES harness and that the Resurrect was correctly observed by the Operations Center. Figure 28 provides MILES Kill information during vehicle participation.

TYPE OF HIT/KILL	NUMBER OF KSI FLASHES	AUDIBLE INDICATION
Vehicle		
Shoulder-Mounted Assault Weapon (SMAW) Spotting Rifle	1 Flash	None
Near Miss	2 Flashes	Near Miss
Hit	4 Flashes	Hit
Mobility Kill	4 Flashes	Hit, Mobility, Stop Vehicle. (The crew has 20 secs to bring the vehicle to a stop.)
Fire Power Kill	4 Flashes	Hit, Fire Power
Communications Kill	4 Flashes	Hit, Commo Kill. (Disables external communications only).
Catastrophic Kill	Flashes Continuously	Vehicle Kill
Administrative Kill	Flashes Continuously	Vehicle Kill
Cheat Kill	Flashes Continuously	Cheat Kill
Reset/Resurrect	1 Flash	Reset/Resurrect
IWS		
Near Miss	N/A	2 Beeps
Kill	N/A	Continuous
Administrative Kill	N/A	Continuous
Cheat Kill	N/A	Continuous
Reset/Resurrect	N/A	4 Beeps
<p>Notes: Cheat Kill will occur during a Mobility Kill if the vehicle does not stop within the allotted 20 seconds or moves after it has stopped. A Cheat Kill will occur when disconnecting any of the following pieces of vehicle equipment: Kill Status Indicator (KSI), any Detector Belt/Array, or Power Controller (must be reconnected for cheat to be indicated), or removing the battery on IWS Console (DPCU).</p> <p>The KSI is issued as part of a separate equipment kit.</p> <p>In the event of a Catastrophic or Communications Kill, external communications can be overridden for EMERGENCIES ONLY by pressing the USER INFO push button on the Control Unit, selecting communications override and pressing the ENTER push button.</p>		

Figure 28. MILES Kill Indication Chart

The installation of the mounted RDMS IPU is complete.

The RDMS IPU has external connectors for an External GPS Antenna and an External LTE Antenna. When the operational necessity exists, cables and external antennas will be provided for those functions.

Replacement

1. Follow mounted removal procedures above.
2. Follow mounted installation and checkout procedures above.

Repair

If a RDMS IPU failure is suspected, press and hold the multi-function button for 3 consecutive seconds and check to see if the LED light illuminates. If yes, then continue to troubleshoot the problem by checking the connector. If the connector is suspect, change the connector. If the RDMS IPU still does not power up, then remove and replace the RDMS IPU per procedures above.

Pack

The RDMS IPU should be packaged and kept in a dry, dust free container while not in use.

Unpack

Remove the RDMS IPU from its storage container and inspect for defects prior to installation.

Prepare for use

Unpack the RDMS IPU from its container and ensure that the connector pins are not bent or loose prior to installation.

Assemble

The RDMS IPU should not be assembled by the user (assembly is only by certified repair technicians).

Disassemble

The RDMS IPU should not be disassembled by the user (disassembly is only by certified repair technicians).

Clean

The RDMS IPU should be kept dry and dust free as much as possible. Clean the RDMS IPU with a dry/lint free cloth. Caution: Do not use corrosive cleaning solutions on the RDMS IPU. If required, use a damp cloth only and then dry the RDMS IPU with a dry/lint free cloth.

Nondestructive inspection

Not applicable.

Place in service

The RDMS IPU will be placed into service at the Combat Training Centers (CTC). The number of RDMS IPU devices placed into service for each rotation will be based upon the needs of the Training rotations and number of Player units required to support.

CHAPTER 5
SUPPORTING INFORMATION
FOR
RANGE DATA MEASUREMENT SUBSYSTEM (RDMS)
INSTRUMENTED PLAYER UNIT (IPU)

OPERATOR INSTRUCTIONS

RANGE DATA MEASUREMENT SUBSYSTEM (RDMS) INSTRUMENTED PLAYER UNIT (IPU)

SUPPORTING INFORMATION

INTRODUCTION

Data regarding supporting information was not available for this draft. The content of this paragraph will be determined at a later date.

DRAFT

OPERATOR INSTRUCTIONS

RANGE DATA MEASUREMENT SUBSYSTEM (RDMS) INSTRUMENTED PLAYER UNIT (IPU)

REFERENCES

INTRODUCTION

Information regarding references was not available for this draft. The content of this paragraph will be determined at a later date.

DRAFT

OPERATOR INSTRUCTIONS**RANGE DATA MEASUREMENT SUBSYSTEM (RDMS) INSTRUMENTED PLAYER UNIT (IPU)****INTRODUCTION FOR STANDARD TWO-LEVEL MAC**

INTRODUCTION**Two-Level Maintenance Concept (Field and Sustainment)**

The CTC-IS is designed to complement the move to a two-level maintenance system, which features on-system work at the field level of maintenance and off-system, “inside-the-box” repair of components and LRUs at the sustainment level of maintenance.

The advantages of a two-level maintenance system are:

- A reduced logistics footprint in the training environment.
- Faster returns of equipment to the training scenario.
- Decreased equipment evacuation requirements.
- Increased productivity of maintainers and increased combat training power.
- Possible force structure savings.

Field Level Maintenance

- Organizational maintenance—Maintenance that is the responsibility of the using organization on its assigned equipment. It includes inspecting, servicing, lubricating, and replacing minor components.
- Intermediate maintenance—Maintenance performed at or near the weapon training system. It normally consists of calibration, repair, or replacement of damaged or unserviceable parts, components, or assemblies.
- For the CTC-IS, Field Level Maintenance will be performed by US Army personnel and/or contractors.

Sustainment Level Maintenance

- Sustainment-level maintenance encompasses the more complex and extensive work, or work that is sensitive in nature (requiring support equipment or technical skill sets beyond what can be reasonably sustained in the field level).
- Sustainment level maintenance will perform LRU repair (off-site).
- For the CTC-IS, Sustainment Level Maintenance will be performed by US Army personnel and/or contractors.

Table 17 below provides RDMS Maintenance Allocation Chart (MAC) for the Two Level Maintenance for the RDMS IPU.

Table 17. RDMS Maintenance Allocation Chart (MAC)

MAINTENANCE ALLOCATION CHART (MAC) FOR INSTRUMENTED PLAYER UNIT (IPU)										
(1)	(2)	(3)	(4)							(5)
Group Number	Component/ Assembly	Maintenance Function	Maintenance Level							Tools and Test Equipment Reference Code
			Field			Sustainment				
			C	O	F	L	H	G	D	
10	Instrumented Player Unit (IPU)									
		Load / Unload								
		Setup	0.01							
		Inspect	0.01							
		Remove and Replace	0.01							
		Clean	0.01							

OPERATOR INSTRUCTIONS**RANGE DATA MEASUREMENT SUBSYSTEM (RDMS) INSTRUMENTED PLAYER UNIT (IPU)****COMPONENTS OF END ITEM (COEI) AND
BASIC ISSUE ITEMS (BII) LISTS**

SCOPE

This work package lists COEI and BII for the RDMS IPU to help inventory items for safe and efficient operation of the equipment.

GENERAL

The COEI and BII information is divided into the following lists:

Components of End Item (COEI)

This list is for information purposes only and is not authority to requisition replacements. These items are part of the RDMS IPU. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Items of COEI are removed and separately packaged for transportation or shipment only when necessary. Illustrations are furnished to assist in finding and identification of the items.

Basic Issue Items (BII)

These essential items are required to place the RDMS IPU in operation, operate it, and to do emergency repairs. Although shipped separately packaged, BII must be with the RDMS IPU during operation, and when it is transferred between property accounts. Listing these items is your authority to request/requisition them for replacement based on authorization of the end item by the Table of Organization and Equipment/Modified Table of Organization and Equipment (TOE/MTOE) or Table of Distribution and Allowances (TDA). Illustrations are furnished to assist in finding and identification of the items.

Explanation of Columns in the COEI List and BII List

The following explanations describe the columns in Table 18 and Table 19 below.

- Column (1) - Illus Number. The number of the item illustrated.
- Column (2) - National Stock Number (NSN). Identifies the stock number of the item to be used for requisitioning purposes.
- Column (3) - Description, Part Number/Commercial and Government Entity Code (CAGEC). Identifies the Federal item name (in all capital letters) followed by a minimum description when

needed. The stowage location of COEI and BII is also included in this column. The last line below the description is the CAGEC (in parentheses) and the part number.

- Column (4) - Usable On Code. When applicable, gives you a code if the item you need is not the same for different models of equipment.
- Column (5) - U/I. Unit of Issue (U/I) indicates the physical measurement or count of the item as issued per the National Stock Number (NSN) shown in column (2).
- Column (6) - Qty Rqr. indicates the quantity required.

Table 18. Components of End Item (COEI)

(1)	(2)	(3)	(4)	(5)	(6)
ITEM NUMBER	NATIONAL STOCK NUMBER (NSN) and Illustration	DESCRIPTION / PART NUMBER (CAGEC)	USABLE ON CODE	U/I	QTY RQR
1		Instrumented Player Unit (IPU)	NTC/JRTC	1	22000
2		Interconnecting Cable	NTRC/JRTC	1	22000

Table 19. Basic Issue Items (BII) Lists

(1)	(2)	(3)	(4)	(5)	(6)
ITEM NUMBER	NATIONAL STOCK NUMBER (NSN) and Illustration	DESCRIPTION / PART NUMBER (CAGEC)	USABLE ON CODE	U/I	QTY RQR
1		Instrumented Player Unit (IPU)	NTC/JRTC	1	22000
2		Interconnecting Cable	NTRC/JRTC	1	22000

OPERATOR INSTRUCTIONS

RANGE DATA MEASUREMENT SUBSYSTEM (RDMS) INSTRUMENTED PLAYER UNIT (IPU)

EXPENDABLE AND DURABLE ITEMS LIST

INTRODUCTION

Information regarding expendable and durable items was not available for this draft. The content of this paragraph will be determined at a later date.

EXPENDABLE AND DURABLE ITEMS LIST

Information regarding the expendable and durable items list was not available for this draft. The content of this paragraph will be determined at a later date.

OPERATOR INSTRUCTIONS

RANGE DATA MEASUREMENT SUBSYSTEM (RDMS) INSTRUMENTED PLAYER UNIT (IPU)

TOOL IDENTIFICATION LIST

INTRODUCTION

Information regarding tool identification was not available for this draft. The content of this paragraph will be determined at a later date.

TOOL IDENTIFICATION LIST

Information regarding the tool identification list was not available for this draft. The content of this paragraph will be determined at a later date.

OPERATOR INSTRUCTIONS

RANGE DATA MEASUREMENT SUBSYSTEM (RDMS) INSTRUMENTED PLAYER UNIT (IPU)

CRITICAL SAFETY ITEMS AND PARTS

INTRODUCTION

Information regarding critical safety items and parts was not available for this draft. The content of this paragraph will be determined at a later date.

CRITICAL SAFETY ITEMS AND PARTS

Information regarding the critical safety items and parts used for the system was not available for this draft. The content of this paragraph will be determined at a later date.

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS <small>For use of this form, see AR 25-30; the proponent agency is DAASA.</small>						Use Part II (reverse) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE 30 August 2002
TO: (Forward to proponent of publication or form) (Include ZIP Code) Commander, PEO STRI ATTN: PEO-SFAE-STRI-PS-Q 12350 Research Parkway, Orlando, FL 32826-3278						FROM: (Activity and location) (Include ZIP Code) Jane Q. Doe, SFC 1234 Any Street Anytown, AL 34565	
PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS							
PUBLICATION/FORM NUMBER TM 11-1234-567-14				DATE 16 Sep 2001		TITLE Operator, Field and Sustainment Support Maintenance Manual for Radio, AN/ABC-123	
ITEM	PAGE	PARA- GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON	
1	WP0005 Pg. 3		2			Text or Corrective Action column should identify a different WP number.	
TYPED NAME, GRADE OR TITLE Jane Q. Doe, SFC				TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION 123-4567		SIGNATURE	

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PUBLICATION/FORM NUMBER				DATE		TITLE	
ITEM	PAGE	PARA- GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON	
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PUBLICATION/FORM NUMBER			DATE		TITLE			
PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION
PART III - REMARKS (Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)								
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August 11, 2013

PEO STRI

The proponent agency of this publication is the U.S. Army Program Executive Office for Simulation, Training and Instrumentation (PEO STRI). Users are invited to send comments to the Chief Acquisition Logistics Manager, PEO STRI. ATTN: SFAE-STRI-PS-Q, 12350 Research Parkway Orlando, FL 32826-3276

Chief Acquisition Logistics Manager

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