

PERSONNEL TRACKING AND POSITIONING SYSTEM TECHNICAL SPECIFICATION

2023

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1. TOPIC

1.1 TOPIC

1.1 This Technical Specification describes the requirements and features of the "PERSONNEL TRACKING AND POSITIONING SYSTEM" that will be procured to meet the needs of It covers inspection methods and related matters.

2. GENERAL CONSIDERATIONS

2.1 DEFINITIONS AND ABBREVIATIONS:

2.1.1 In this Technical Specification, the term "PTPS" will be used instead of "PERSONNEL TRACKING AND POSITIONING SYSTEM."

2.1.2 Purpose of Use: The PTPS device will be installed and utilized for viewing and directing the distance between personnel, providing instantaneous geographical location information, and displaying land and residential location information on satellite maps, tactical, MGRS, and UTM map bases in the most effective and accurate manner.

2.1.3 Administration:

2.1.4 Lot: A group of PTPS units of the same class, type, genus, variety, and species submitted for inspection at one time.

2.1.5 Hz: Hertz

2.1.6 V: Volt

2.1.7 AC: Alternating Current

2.1.8 DC: Direct Current

2.1.9 CCD: Charge-Coupled Device

2.1.10 RF: Radio Frequency

2.1.11 DIAMETER: A straight line passing through the center of a circle and dividing the circle into two equal parts.

2.1.12 PCB: Printed circuit boards are plates on which electronic circuit elements are placed, and the electrical connection between these elements is provided by means formed on the copper surface.

2.1.13 GPS: Global Positioning System (generally understood systems)

3. REQUEST AND SPECIFICATIONS

3.1 General Requests:

3.1.1 Conditions of Use: PTPS devices will be installed and removed without any issues on assault vests and helmets with Picatinny rails in the inventory of

3.1.2 PTPS Production Date: PTPS will not be produced before the tender year.

3.1.3 Uniformity of PTPS: All PTPS units will be of the same type, brand, model, and features.

3.1.4 Delivery Condition: PTPS will be delivered in a trouble-free working condition, including all parts, accessories, and materials.

3.1.5 PTPS Condition: PTPS will be new and unused, free from manufacturing and material defects, without any breakage, cracks, scratches, rust, paint defects, swelling, or deformation. All surfaces will be covered with paint or coating materials.

3.1.6 Storage Apparatus: When held in the storage position without the carrying bag, there will be a total of 1 (one) preservation apparatus made of the same color fabric, ensuring the weight center is maintained.

3.1.7 Connection Accessories: For the ability to attach to universal Picatinny rail helmets, connection accessories will be provided with each PTPS.

3.1.8 Markings on PTPS: PTPS will have the following markings:

3.1.8.1 Manufacturer's brand and/or emblem and device model,

3.1.8.2 Manufacturing year,

3.1.8.3 Serial number (engraved on the body using a pantograph device, acid etching, or laser processing methods).

3.1.9 Materials Provided with Each PTPS:

3.1.9.1 1 (one) carrying bag for the entire system,

3.1.9.2 50 (fifty) pieces of 1.5-volt AAA+ batteries,

3.1.9.3 1 (one) external power supply adapter with input (USB power input),

3.1.9.4 1 (one) battery/charger,

3.1.9.5 Storage card compatible with the operator monitoring and tracking unit,

3.1.9.6 Cleaning kit: 1 (one) dust cleaning brush and at least 100 ml (milliliters) cleaning solution per bag,

3.1.9.7 1 (one) mounting apparatus and protective cover for the operator control monitoring unit on the assault vest,

3.1.9.8 1 (one) directional unit tablet pen,

3.1.9.9 Up to 3 (three) protective and concealing transport bags made of the same color and size fabric,

3.1.9.10 1 (one) mechanical stabilizer.

3.1.9.11 1 (one) Samsung Galaxy Tab Active 3 tablet and computer charging cable,

3.1.9.12 1 (one) external memory containing a detailed user manual and promotional video prepared in (USB and CD-DVD).

3.2 Technical Specifications:

3.2.1 Composition of PTPS:

The PTPS will consist of the following main components and accessories; the entire system will operate smoothly with a suitable antenna in a 2 km radius for at least 4 hours in active mode and 20 hours in standby mode.

3.2.1.1 Mobile and portable tracking unit,

3.2.1.2 Operator monitoring and tracking unit,

3.2.1.3 External battery block,

3.2.1.4 Bag,

3.2.1.5 Tablet protective cover and mechanical stabilizer for assault vests,

3.2.1.6 23 attachable antenna-equipped location notification devices.

3.2.2 Tablet Specifications:

With each PTPS system, a tablet with the following specifications will be provided: Screen Size 8.0 inches, Screen Resolution 1920 x 1200 Pixels, Pixel Density 283 PPI, Screen Technology PLS TFT.

3.2.3 Protective Case:

With each PTPS, a protective simple PVC case covering the device will be provided to ensure it does not overheat for extended periods under various weather conditions and is not damaged by harsh weather conditions.

3.2.4 Charging System:

The charging system will be capable of distributing power output at the required voltage and amperage. There will be a protection system to prevent damage to the PTPS due to fluctuating and inconsistent power outputs.

3.2.5 Weight:

The weight of the PTPS, including the main components and accessories specified in Technical Specification 3.2.1.1, 3.2.1.2, 3.2.1.3, 3.2.1.4, and 3.2.1.5, will not exceed a total of 11 kg (eleven kilograms).

3.2.6 Battery Life:

The battery/power block on the PTPS will have a minimum operating time of 6 hours during monitoring.

3.2.7 Charging System Compatibility:

The battery charger will operate smoothly with $220\pm 10\%$ VAC (two hundred twenty plus or minus ten percent volts of alternating current) and $50\pm 3\%$ Hz (fifty plus or minus three percent hertz) city power grid.

3.2.8 Battery Block Housing:

The battery block will be isolated from external environments and located in a closed compartment. It will have an impact-resistant, replaceable lock that can be easily attached and detached by the user.

3.2.9 Battery Type and Indicators:

The PTPS will operate with a customized Li-ion rechargeable battery block. LED indicators on the battery block will display the battery level and will illuminate only when the battery pack is shaken. There will be no externally visible lights on the PTPS.

3.2.10 MTBF (Mean Time Between Failures):

The MTBF value of the PTPS will be at least 4,000 hours.

3.2.11 Location Logging:

The PTPS will log the positions received from devices worn by personnel.

3.2.12 Media Filtering in Gallery Menu:

In the PTPS gallery menu, photos and videos will be filtered separately, displaying them in dedicated tabs. Any photo or video can be marked as a favorite if desired, allowing it to be additionally filtered in the favorite tab.

3.2.13 Internal Memory and Log Recording:

The PTPS will have internal memory capable of recording logs for a minimum of 4 hours.

3.2.14 Media Interface for Log Display:

The PTPS will have a media interface displaying recorded logs.

3.2.15 User Profiles in Menu:

To facilitate the usage of different users, user profiles can be created within the menu of the PTPS. These profiles can be named through the virtual keyboard in the menu.

3.2.16 Image Processing, Transmission, and Intervention Menu:

The image processing, transmission, and intervention menu of the PTPS will be available in

3.2.17 Optional User Authentication:

An optional opening password can be created at the PTPS startup. The PTPS will not be operable without entering the correct password.

3.2.18 Software Updates:

Software updates for the PTPS can be performed both wired and wirelessly.

3.2.19 Customizable Startup Screen:

The startup screen of the PTPS can be customized by the user.

3.2.20 Connector Placement:

The outputs of the connectors on the PTPS will be located on the side of the device and will not be positioned towards the user's face during use.

3.2.21 Operator Monitoring and Tracking Unit:

3.2.22 Operator Monitoring and Tracking Unit Design:

The operator monitoring and tracking unit will be designed as a single piece with the bag and will be at least IP67 compliant, offering resistance to dust and water.

3.2.22.1 External Storage Unit:

The PTPS will have an external storage unit where location information received from personnel tracking units will be transferred.

Certainly, I'll continue translating the technical specifications into English, including technical terms:

3.2.22.1.1. The external display unit will be integrated within the operator tracking and monitoring unit.

3.2.22.1.2. The screen resolution of the display unit will be 1280x1024 pixels.

3.2.22.1.3. The display unit will be color and single-screen structured.

3.2.22.1.4. The screen will be a minimum of 8" diagonal length.

3.2.22.2. PTPS can wirelessly transfer information from personnel tracking devices to the Operator Monitoring and Tracking Unit.

3.2.22.3. The dimensions of the operator tracking and monitoring unit, excluding antennas and other accessories, will be a maximum of 32x22x9 cm (width x length x height). Width is defined as the distance between the far left and right points (including the screen) when viewed from the front, and thickness is defined as the height when placed on a table.

3.2.22.4. The operator tracking and monitoring unit will weigh a maximum of 500 g.

3.2.22.5. It will have video output in PAL, NTSC, or HDMI standards, allowing data information and images to be transferred to an external computer, TV, or monitor.

3.2.22.6. Personnel tracking devices will have control buttons to enable operation in closed, standby, and standby modes.

3.2.22.7. The operator monitoring and tracking unit will use at least 2 (two) pin connectors for charging output and input, allowing for additional switch allocation.

3.2.22.7.1. Operator monitoring and tracking interfaces will include distance measurement, deletion, ID addition, and naming.

3.2.22.7.2. It will have manual activation, SOS (emergency button), standby, close, and other features.

3.2.22.7.3. Changes in the field of view on maps.

3.2.22.7.4. Zoom and focus.

3.2.22.7.5. Output feature.

3.2.22.8. At least 1 (one) battery charger will be provided for charging the battery with each PTPS.

3.2.22.9. The battery charger will operate with $220\pm 10\%$ VAC, $50\pm 3\%$ Hz mains power.

3.2.22.10. The operator control unit can be directly operated with $220\pm 10\%$ VAC, $50\pm 3\%$ Hz mains power if desired.

3.2.22.11. The menu language will be in [language], and the software interface will be user-friendly.

3.2.22.12. There will be communication allowing access to the operator monitoring and tracking unit from at least 20 m (twenty meters) away.

3.2.23. Operator monitoring and tracking unit software:

3.2.23.1. It will integrate with the operator monitoring and tracking unit.

3.2.23.2. It will be encrypted, closed to external input.

3.2.23.3. It will provide controlled monitoring with permission through the interface.

3.2.24. Carrying Case:

3.2.24.1. It will have at least 1 (one) adjustable shoulder strap to allow the PTPS to be carried on the shoulder in the field and at least 1 (one) side with a zipper.

3.2.24.2. There will be compartments for spare battery blocks, cleaning kit, and the user manual.

3.2.24.3. Its external color will be black or tan.

3.2.25. Transport Case:

3.2.25.1. There will be a maximum of 1 (one) transport case for each PTPS and accessories.

3.2.25.2. Transport cases will have sponge-lined compartments to properly place the PTPS and accessories.

3.2.25.3. The PTPS and accessories inside the transport case will be placed and secured in a way that prevents any damage during transportation.

3.2.25.4. Transport cases will be black.

3.2.25.5. Transport cases will be made of polymer material and have IP67 dust and waterproof features.

3.2.26. Physical Examination: All PTPS will undergo visual, dimensional, and document inspections with suitable-purpose and calibrated measuring tools according to the Technical Specification Table-1.

3.3. Environmental Features:

3.3.1. Operating Temperature: PTPS will not be damaged and will operate between at least -10°C (minus ten degrees Celsius) and $+50^{\circ}\text{C}$ (plus fifty degrees Celsius) for 60 (sixty) minutes when held within this temperature range. The standby time between the two temperatures will be 1 hour at room temperature [$21\pm 3^{\circ}\text{C}$ (twenty-one plus or minus three degrees Celsius) temperature range].

3.3.2. Storage Temperature: PTPS will be stored without issues between at least -20°C (minus twenty degrees Celsius) and $+65^{\circ}\text{C}$ (plus sixty-five degrees Celsius).

3.3.3. Humid Environment: When stored in an environment with a temperature of $+30\pm 2^{\circ}\text{C}$ (plus thirty plus or minus two degrees Celsius) to $+60\pm 2^{\circ}\text{C}$ (plus sixty plus or minus two degrees Celsius) and a relative humidity of $95\pm 5\%$ (ninety-five plus or minus five percent), PTPS will not be damaged and will perform all functions.

3.3.4. Dust and Sand Resistance: PTPS will be resistant to dust and sand when the moving parts are exposed.

3.3.5. Impact: When dropped from a height of 120 ± 2 cm (one hundred twenty plus or minus two centimeters) inside the transport case onto fine sand with a depth of 15.3 ± 0.5 cm (fifteen point three plus or minus zero point five centimeters) covered with a thin cloth, PTPS will not incur any damage, and all functions will work smoothly.

3.4. Classification of Errors: Errors in the Technical Specification are classified into 3 (three) categories: Critical Error, Major Error, and Minor Error.

3.4.1. Critical Errors: These represent errors that impede the performance of the product, are dangerous for the user or maintainer, and can potentially cause vital danger depending on the type of material received.

3.4.2. Major Error: Apart from critical errors, these are errors that can affect the shape, function, compatibility with other products used together, reliability, replaceability, service life, shelf life, performance, and cost of the product.

3.4.3. Minor Error: These do not prevent the product's intended use, do not limit its use, and do not affect its shape, function, and compatibility. However, they may involve some minor deviations from production standards.

Table-1: Amount of Error for Visual, Measurement and Document Inspections

Number of Samples to be Taken	ERROR DESCRIPTION								
	Critical Error			Big Mistake			Small Mistake		
	K	TT	R	K	TT	R	K	TT	R
..... (.....) piece	0	-	1	4	-	5	8	-	9

Table-2: Visual, Measurement, and Document Inspection Errors

Item No.	Critical Error	Big Mistake	Small Mistake	Inspection Method
3.1.2				Visual
3.1.4				Visual
3.1.5				Visual
3.1.6				Visual
				Visual
				Visual/ Measurement
				Visual
				Visual
				Measurement
				Visual
				Measurement
				Measurement
				Measurement
				Visual
				Visual
				Visual
				Measurement
				Visual

4. SAMPLING

4.1 Sampling procedures will be carried out in accordance with the regulations outlined in the Regulation on Inspection and Acceptance Procedures for Goods Inspections and Acceptances conducted by the Inspection and Acceptance Commission appointed by the Administration.

4.2 All PTPS units will be taken as samples for Visual, Dimensional, and Document Inspections.

4.3 Necessary supporting personnel will be present during the sampling process, and the contractor company will ensure that damaged packaging is properly resealed.

4.4 For Laboratory Inspections and environmental tests, one (1) PTPS sample selected randomly by the Inspection and Acceptance Commission passing Visual, Dimensional, and Functional Inspections will be taken. If more samples are needed for Laboratory Inspection, this number can be increased.

4.5 The quantity deducted from the batch for Laboratory Inspection will be replenished by the contractor company with new products/items up to the required amount.

Table-4: Sampling Plan for Inspections

Inspections to be Performed	Amount of Sample to be Taken
Physical examination (.....) pieces
Function Examination	10 (ten) pieces
Laboratory Examination	1 (one) piece (IF NECESSARY)

5. INSPECTION AND INSPECTION METHODS

5.1 Inspection, testing, and acceptance procedures for the procurement of "PTPS" as specified by this Technical Specification will be carried out in accordance with the principles and procedures specified in Article 5 of the Technical Specification.

5.2 The establishment and duties of the Inspection and Acceptance Commissions will be carried out in accordance with the provisions specified for Goods Inspection and Acceptance Procedures for themselves in the Regulation on Inspection and Acceptance Procedures for Goods Inspections and Acceptances.

5.3 All tools, equipment, auxiliary personnel, and test devices required for inspections will be provided by the contractor company. The contractor company will deliver the measuring devices used during the physical inspection.

5.4 Following the tests and controls conducted by the Inspection Commission on the PTPS, for aspects not visually and manually detectable as per the Technical Specification, the testing will be conducted in the Administration's own laboratories if available, otherwise in laboratories belonging to other public institutions, and if this is not possible, in private laboratories. Tests that cannot be performed in domestic laboratories will be conducted in foreign laboratories.

5.5 When laboratory inspections are conducted at the manufacturer's facilities as a special laboratory, laboratory inspections will be carried out using purpose-appropriate test equipment at the

manufacturer's facility. During the manufacturer's inspection, the manufacturer will provide calibration certificates for all test equipment to the Inspection and Acceptance Commission.

5.6 The contractor company will submit, during the inspection phase, three (3) copies of sworn translations by sworn translation bureaus for documents requested in the Technical Specification that are in a foreign language, along with the originals. The evaluation of the conformity of the relevant articles to the Technical Specification will be based on these documents by the Inspection and Acceptance Commission.

5.7 The producer and the contractor company will be legally responsible for accidents, damages, and any kind of injury or death incidents that may occur due to material, design, and manufacturing errors during inspections.

5.8 Interim Inspection aims to prevent irreversible errors, avoid delays in delivery, and ensure timely correction of errors in cases where control is not possible after the completion of manufacturing or production. After the contractor company notifies the Administration that production has started, the Administration, when deemed necessary, may conduct interim inspections at specified stages and intervals, with or without prior notice, through individuals or experts appointed by the Administration, and all expenses will be covered by the Administration.

5.9 All expenses related to inspections will be borne by the Administration within and outside the production country.

5.10 After the contractor company notifies the Administration that the batch is ready for inspection, inspections will be carried out at the manufacturer's facilities. The delivery of the PTPS units, as specified in Article 9.1 of the Technical Specification, will be made by the contractor company at the production site. Inspection and acceptance documents will be prepared after the batch is delivered to the warehouse.

5.11 All expenses related to inspections will be covered by the Administration.

5.12 Types of Inspections:

5.12.1 Visual, Dimensional, and Document Inspection: The entire PTPS and its accessories will undergo a 100% visual, dimensional, and document inspection. This inspection will verify the completeness of all materials and accessories, as well as check for rust, breakage, cracks, paint, and whether they are new or not. It will also assess compliance with the requirements specified in Articles 3. Request and Specifications and 6. Packaging and Labeling. Faulty products and materials identified during Visual, Dimensional, and Document Inspection will be replaced with new ones, and the replaced products and materials will undergo Visual, Dimensional, and Document Inspection again. PTPS units without defects will be accepted. Error evaluation will be performed according to Table-1.

5.12.2 Functional Inspection: Ten (10) randomly selected PTPS units that have passed Visual, Dimensional, and Document Inspection will be evaluated for their ability to meet the functional specifications specified in Articles 3.1.3, 3.2.6, 3.2.7, 3.2.9, 3.2.11, 3.2.12, 3.2.13, 3.2.15, 3.2.17, 3.2.19, 3.2.22.2, 3.2.22.7, 3.2.22.8, 3.2.22.9, and sub-articles, 3.2.22.10, 3.2.22.13, 3.2.22.14, 3.2.22.16, 3.2.23.1, 3.2.24.2.8, and 3.2.25.2. Error evaluation will be performed according to Table-3.

5.12.2.1 Laboratory Inspection: One (1) PTPS unit randomly selected by the Inspection and Acceptance Commission from those that have passed the Functional Inspection will undergo tests that, when subjected to, will not cause damage, will not result in any change in performance, and will perform its functions flawlessly. Materials that cannot be visually and manually detected but can be documented

will be tested in the laboratory. In the Laboratory Inspection, the PTPS will comply with all the provisions specified in Articles 5.12.2.2, 5.12.2.4, 5.12.2.5, and 5.12.2.6.

5.12.2.2 Operating Temperature Inspection: The PTPS will withstand temperatures specified in Article 3.3.1 for 60 minutes without damage and will operate. The waiting time between two temperatures will be 60 minutes. The temperature during the waiting period will be room temperature.

5.12.2.3 Storage Temperature Inspection: The PTPS will be able to be stored without damage within the temperatures specified in Article 3.3.2.

5.12.2.4 Humid Environment Inspection: The PTPS will be tested for 24 hours with a cycle according to MIL-STD 810H (on request) method 507.6 and will comply with Article 3.3.3.

5.12.2.5 Dust and Sand Resistance: The PTPS, when installed, will be resistant to dust and sand. Dust and sand conditions will comply with MIL-STD 810H (on request) Method 510.7 Procedure I, and will comply with Article 3.3.5.

5.12.2.6 Impact: The PTPS will undergo testing according to MIL-STD 810H (on request) Method 516.8 Procedure I, and will comply with Article 3.3.6.

6. PACKAGING AND LABELING

6.1 The PTPS will be packaged to withstand transportation by air, land, and sea, and will be resistant to storage conditions for at least the warranty period.

6.2 Each PTPS will be delivered with its accessories in a transport case. The transport cases will be delivered on a pallet, secured with metal or plastic straps. The manufacturer is not responsible for damages that occur during transportation.

6.3 The PTPS will have a permanent print, written or labeled in a way that does not easily erase, in an appropriate location on the PTPS, indicating the manufacturer's brand, emblem, and device model.

6.4 With each transport case, a informative brochure prepared in the language of and a user and maintenance catalog for the PTPS will be provided.

6.5 The contractor will deliver a spare parts catalog with part numbers for the PTPS to the Administration along with the PTPS units.

6.6 On a white label, in large letters and dark black color, information specifying the type of material, manufacturer's name, production year, buyer's institution name, and material quantity will be written. This label will be affixed to the two sides of the packaging boxes.

7. WARRANTY TERMS

7.1 The warranty period for the PTPS, including all equipment, will be a minimum of 2 (two) years from the date of final acceptance.

7.2 In case of malfunction due to material, workmanship, or assembly errors within the warranty period, the contractor is obligated to repair the PTPS without charging any fees for labor, replacement parts, or under any other title.

7.3 The maximum repair time for the PTPS is 60 (sixty) calendar days. This period starts from the date the malfunction of the PTPS is reported to the contractor or the authorized service. If the malfunction of the PTPS cannot be fixed within 30 (thirty) calendar days, the contractor will provide a similar PTPS to the Administration until the repair is complete. The time spent on repairs will be added to the warranty period. If the repair is not completed within 60 (sixty) calendar days and an equivalent PTPS with the same functionality is not delivered to the relevant unit where the faulty product is used within 30 (thirty) calendar days, a penalty of 0.1% (one thousandth) of the PTPS contract value will be imposed for each day elapsed.

7.4 Within 1 (one) year after the delivery of the PTPS to the Administration, excluding usage errors and within the specified warranty period, if the same malfunction occurs 2 (two) or more times, or different malfunctions occur 4 (four) or more times, or the total of different malfunctions within the warranty period is 6 (six) or more, and these malfunctions result in the inability to benefit from the product, the contractor is obliged to replace the product.

7.5 Within the specified warranty period, excluding usage errors, if a defective product rate of 10% (ten percent) of the batch is detected, the entire remaining quantity will be replaced within 90 (ninety) calendar days from the date it is reported to the contractor. If requested by the contractor, after delivering the new products to the Administration, the old products remaining at the Administration will be returned to the contractor. For failure to fulfill the obligations stated here, a penalty of 0.1% (one thousandth) of the contract value will be applied for each day elapsed.

7.6 If the commitments are not fulfilled after the application of the penalty procedure specified in Articles 7.3 and 7.5 of the Technical Specification for 90 (ninety) calendar days, the provisions in the contract will be enforced against the contractor.

8. TRAINING

8.1 The contractor will provide practical training on the use and maintenance of the PTPS to the number of personnel determined by the Administration at the training facilities of [Contractor's Name] on a date and time specified by the Administration. Notes related to the provided training, as well as training and promotional videos, will be provided to the participating personnel in digital format (USB and CD-DVD).

8.2 The contractor will not charge any fees for the training provided.

9. OTHER MATTERS

9.1 The PTPS will be delivered to the delivery address of the manufacturer, [Insert Manufacturer's Name] as specified in

9.2 The PTPS, along with all accessories, will be delivered to the Administration in a single batch.

10. ANNEXES

10.1 ANNEX-1: Needs List

“ PERSONNEL TRACKING AND POSITIONING SYSTEM
TECHNICAL SPECIFICATIONS
SIGNATURE PAGE”

PREPARED BY

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