



IU.01.01.OPT

OPT USER MANUAL

NAME

SIGNATURE

DATE

CREATED BY

REVIEWED BY

APPROVED BY

Contents

History of changes	5
1 Introduction	6
2 Conditions of use	7
3 Monitoring system	9
3.1 Monitoring Centre	9
3.2 One Part Tracker - OPT	9
3.3 Home Unit - HU	10
3.4 Communication	11
3.5 Transmission security	11
4 Description of the OPT device	12
4.1 Basic information	12
4.2 Event signalling	13
5 Operating the OPT device	16
5.1 Launch	16
5.1.1 Waking up the OPT device	16
5.1.2 Switching on the device	16
5.2 Device status	17
5.2.1 Device management	17
5.3 Device installation	17
5.3.1 Measurement of leg circumference or arm	17
5.3.2 Installation of the OPT device	18
5.4 Operation	20
5.4.1 Charging the OPT device	20
5.5 Control and inspection	21
5.5.1 Device status details	21
5.5.2 Alarm	21
5.5.3 Status of work	21
5.5.4 Location	21
5.5.5 Violation flags and their interpretation	21
5.6 Deinstallation	21
5.6.1 Switching off	21
5.6.2 Removing the device	22
5.6.3 Removing the carrying strap	22

5.7 Device and component replacement	23
5.8 Storage and transport	23
Disclaimers	24

Lista todo

History of changes

No.	Revision	Version	Changes	Date
1.	—	01	Initial version of the document.	2023-12-08

Chapter 1

Introduction

This manual covers matters related to the OPT device. The manual is intended for employees acting as EMS Specialist, responsible for the correct installation of the device at a Monitored Person and the correct functioning and communication with other components of the Monitoring System.

The document consists of several parts:

- a general description of the Monitoring System, listing all the devices included in it and the relationship between them,
- detailed characteristics of the device,
- device installation procedures.

Chapter 2

Conditions of use

Warning!



The device contains a lithium battery. It is prohibited to disassemble, open or modify the device. The battery cannot be:

- exposed to temperatures above 60°C or flames,
- disassembled or short-circuited.

Failure to follow these instructions may result in the risk of fire, explosion or burns. The used battery is subject to disposal.

Attention!



- The unit is not intended for self-installation. Installation and de-installation must be carried out by the trained EMS Specialist.
- It is prohibited to dismantle, open or modify the device.
- Maintenance or repair work may only be carried out by the manufacturer, or by a service centre authorised by the manufacturer.
- The device should not be exposed to high temperatures (e.g. prolonged exposure to the sun, heating by a lamp, etc.).
- The housing of the unit should not be opened - this will send an alarm signal to the Monitoring Centre.

Attention!

- The device functions as both a radio transmitter and receiver, hence:
 - it is sensitive to radio interference, which can affect the quality of connections to the Monitoring Centre - care should be taken to ensure that no devices emitting radio waves are present in the vicinity,
 - if you need to get close to medical equipment (e.g. ECG, EEG, MRI, etc.), inform the staff immediately that you have the device,
 - it should not be used in explosive atmospheres.
- The device should not be subjected to strong shocks and, in particular, should not be hit with hard objects.
- The device should not be covered with any objects containing metal.
- During daily use, the unit should be cleaned with a dry, soft cloth. Do not use caustic agents, solvents or strong detergents to clean the unit.
- Do not apply paint, veneer, or varnish to the unit.
- The device contains a GSM module, which works like a normal mobile phone and is subject to the same restrictions:
 - should not be used in areas where the use of mobile telephones is prohibited (e.g. on board of aircraft), as it may cause radio interference or other hazards,
 - should not be used in the area of explosive detonation
- Keep the device, its parts and accessories out of the reach of small children.



Dispose of the used device or its components in accordance with the current disposal regulations. Do not dispose them in household or municipal waste containers. For disposal information, please contact your local authorities, waste disposal company or the manufacturer of the device.

Chapter 3

Monitoring system

3.1 Monitoring Centre

The Monitoring Centre is the centre in charge of:

- remote and continuous (24-hour) monitoring of Monitored Persons, in which immediate action is taken upon detection of violations,
- control of the Monitoring System and handling of all recorded events and violations.

3.2 One Part Tracker - OPT

The OPT is a device that works with:

- HU device - allows monitoring whether the Monitored Person is in the designated monitoring zone.

Using a GPS and GSM module, the device allows the wearer to be located independently of other parts of the Monitoring System. By combining the modes of operation of the device, an extremely flexible control mechanism is achieved.

The device is adapted to be worn on the leg (around the ankle) or in special cases on the hand (around the wrist). The OPT, apart from recharging by using a Power Pack (PP), does not require handling by the person being monitored. The device and the PP charger contain LEDs to indicate the status and charge level of the battery.



FIGURE 3.1: *OPT device (left) and OPT device with Power Pack charger (right)*

3.3 Home Unit - HU

The HU is a monitoring device for the OPT devices. The HU device communicates directly with the Monitoring Centre. The HU is required for the determination of the zone of permitted stay of the Monitored Person. The HU can also be used for communication as a telephone, e.g. in emergency situations or when installing equipment at the Monitored Person's premises.



FIGURE 3.2: *View of the HUv3 device*

3.4 Communication

The Monitoring System devices transmit information between each other using GSM and radio frequency (RF) standards.

The HU checks the location (distance) of OPT devices within its range. The HU provides continuous surveillance of the Monitored Person, who must strictly adhere to the surveillance schedule. OPT and HU securely transmit information about the location of the Monitored Person, the status of the equipment and alarms (e.g. attempts to compromise the integrity of the equipment) to the Monitoring Centre.

3.5 Transmission security

All data transmitted within the Monitoring System is encrypted to ensure confidentiality, integrity and authentication. A number of security features are used for this purpose, viz:

- in RF (radio frequency) - a secure and strong encryption algorithm,
- in mobile telephony - all the security features offered by the respective mobile operator and SSL (Secure Sockets Layer) security.

Chapter 4

Description of the OPT device

4.1 Basic information

The OPT device is designed to determine the location of a Monitored Person. It consists of a transmitter, with electronics inside, and a carrying strap. In addition, a Power Pack is included to charge the device. The device number is displayed on the outside in the form of an eight-digit number and a QR code.

The device is designed to be worn on the leg (around the ankle) or hand (around the wrist). The device and the Power Pack charger contain LEDs to indicate the status of the device and the battery charge level. When in operation, the OPT communicates its status directly to the Monitoring Centre or to the HU monitoring device (when within its range).

Electronic monitoring using the OPT is carried out as part of permitted/prohibited zone monitoring or in fixed monitoring in conjunction with the HU. When operating in zone monitoring, the OPT operates in transmitter mode.

Necessary elements to set up monitoring:

- OPT,
- HU (stationary monitoring mode),
- toolkit from the EMS Specialist case,

Before starting the installation, ensure that OPT is sufficiently charged for a smooth installation procedure.

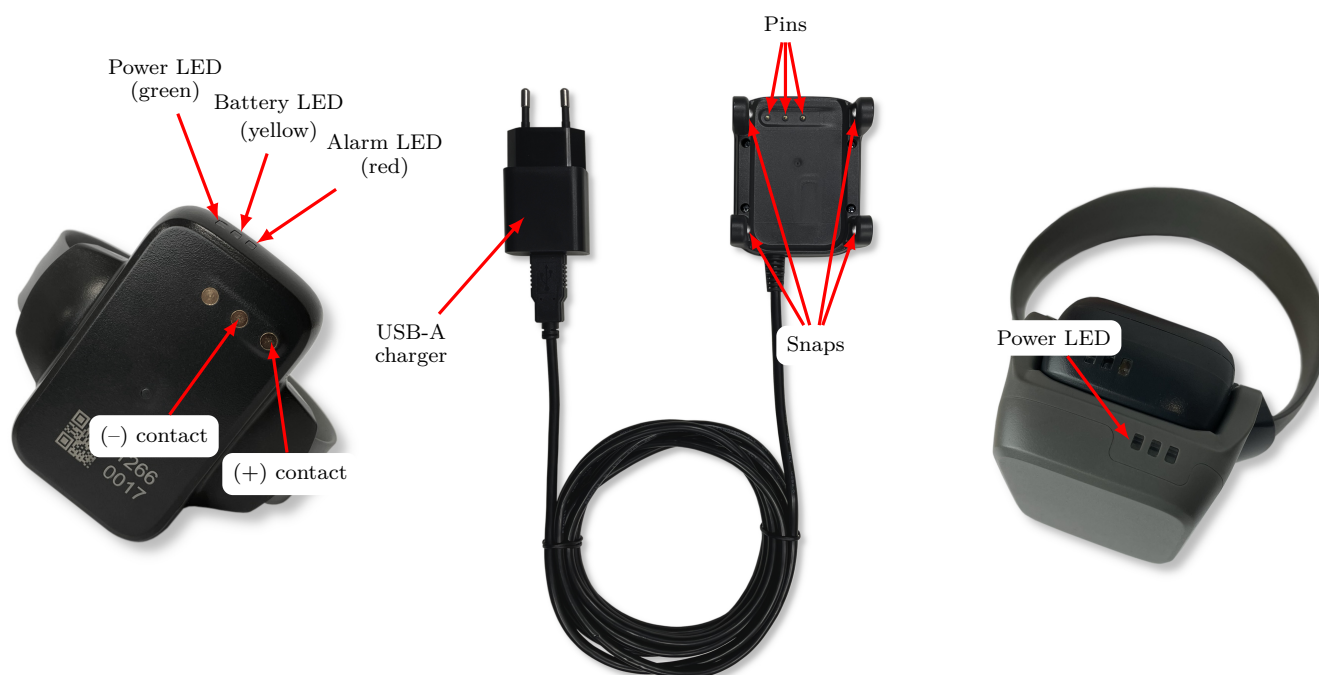


FIGURE 4.1: View of the OPT with Power Pack Charger

The operating time on the battery is at least 24 h. The maximum radio range in open space is approximately 100m. The OPT device is waterproof to IP 68 standard and has a flammability rating of UL 94 HB.



Attention!

The Power Pack is not waterproof.

4.2 Event signalling

The OPT is equipped with four signalling elements - three LEDs (power - green, battery - yellow, alarm - red) and a vibration. The Power Pack charger has one green LED. The security signalling is invisible to the Monitored Person, sent directly to the Monitoring Centre from the OPT device or via the HU.



FIGURE 4.2: Indicator lights on OPT and PP devices

Table 4.1: LED signalling on OPT and PP devices

Event	LED	Vibration
OPT		
the device is switched off	LEDs do not light up	—
the device is in stand-by mode	the green LED flashes every 2 seconds	—
the device is on and in operation	the green LED flashes every 20 seconds	—
battery charge level at 50%	the yellow LED flashes every 3 seconds, 10 times after the event	three fast pulses
low battery charge	yellow and red LEDs flash alternately, each every 3 seconds, 10 times after the event; the signalling is repeated every 10 minutes until the device is recharged or discharged	three fast pulses; the signal is repeated every 10 minutes until the device is connected for charging or discharged
charging the OPT battery	the yellow LED lights up continuously	—
completion of the OPT battery charging	the green and yellow LEDs remain lit until the charger is disconnected	three fast pulses
the OPT battery charging failure or not fully charged	the yellow and red LEDs flash alternately, each every 3 seconds over a period of time 60 seconds after unplugging the charger	three fast pulses

Table 4.1: LED signalling on OPT and PP devices

Event	LED	Vibration
the prisoner is outside of the mandatory zone/is in the prohibited zone	the yellow and red LEDs flash alternately every 1 second, 20 times each from the time of the event; notification is repeated every 10 minutes for the duration of the out-of-range period	three fast pulses; the notification is repeated every 10 minutes for the entire time the Monitored Person is out of range - the pulses are intended to remind the Monitored Person that he is out of the mandatory zone/is in the prohibited zone
Power Pack		
the charger is connected to power supply	green LED on	—
the charger is disconnected from power supply	green LED goes out	—

Attention!

- In strong light (e.g. in bright sunlight), the glow of the LEDs may not be visible.
- The device in *Off mode* only indicates low battery charge.
- If the Monitored Person does not connect the OPT to the PP within one hour of the first low charge indication, the device will stop displaying the indication (see section TODO Charging the OPT device, pp. TODO)

Chapter 5

Operating the OPT device

Electronic monitoring using the OPT can be carried out stand-alone (GPS) and at the location where the HU device is present.

Necessary elements to setup monitoring:

- OPT,
- HU (stationary monitoring),
- toolkit,

Before starting the installation, ensure that the OPT is sufficiently charged for a smooth installation procedure.

5.1 Launch

5.1.1 Waking up the OPT device

The OPT is woken up by plugging the device into the Power Pack charger - note that the PP must be plugged into a mains socket. The action will cause the OPT to go into STAND-BY mode.

5.1.2 Switching on the device

After waking up OPT, the ESM specialist must switch on device through a external application.

5.2 Device status

5.2.1 Device management

The OPT device is managed through specialized external application provided to customer.

5.3 Device installation

5.3.1 Measurement of leg circumference or arm

The process of measuring the circumference of the leg or arm is required when selecting a strap for the OPT device.

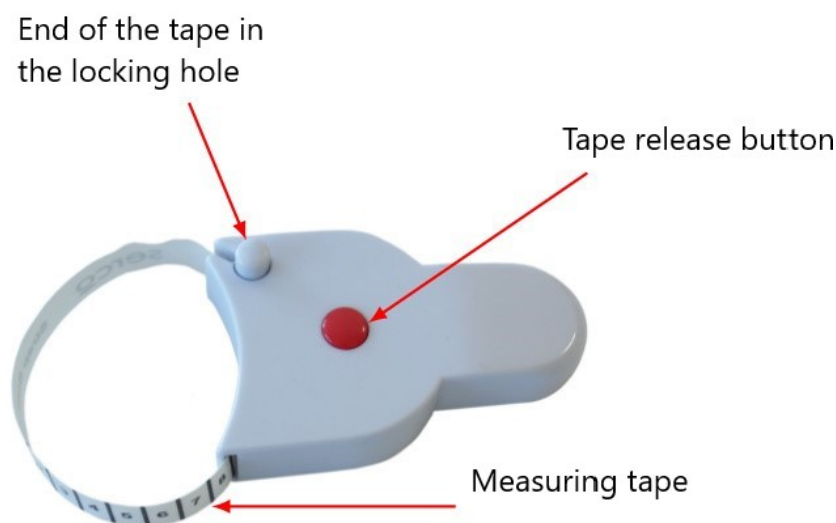


FIGURE 5.1: *Tool for measuring leg circumference or arm circumferences*



Attention!

The OPT device must be placed directly on the skin, not on clothing. Ensure that the leg on which the OPT is placed is not a prosthesis. Measurement of the strap when placing on the arm is done in the same way as for the leg measurement.

1. Press and hold the red button on the gauge housing and pull out the measuring tape. Pull out enough of it to wrap around the leg with the excess, then release the measuring tape button - this will lock the measuring tape in place.

2. Hold the measuring device by the handle and place it (rounded side) on the leg above the ankle with the other hand holding the free end of the tape.
3. Wrap the measuring tape around the leg and place the end of the tape in the locking hole (see Figure 5.2, pp. 18) and then press the red button. The tape will tighten around the leg. Loosen the tape slightly, leaving a gap of approximately 5 mm between the limb and the tape. The measurement result is visible on the scale on the outside of the measuring tape.



FIGURE 5.2: *Measuring leg circumference*

4. After reading the result, remove the end of the tape from the locking hole and then retract the tape by pressing the red button. The measuring tape will roll up and return to its initial state.
5. According to the measurement taken, a carrying strap must be selected. The number on the measuring tape corresponds to the number on the strap.

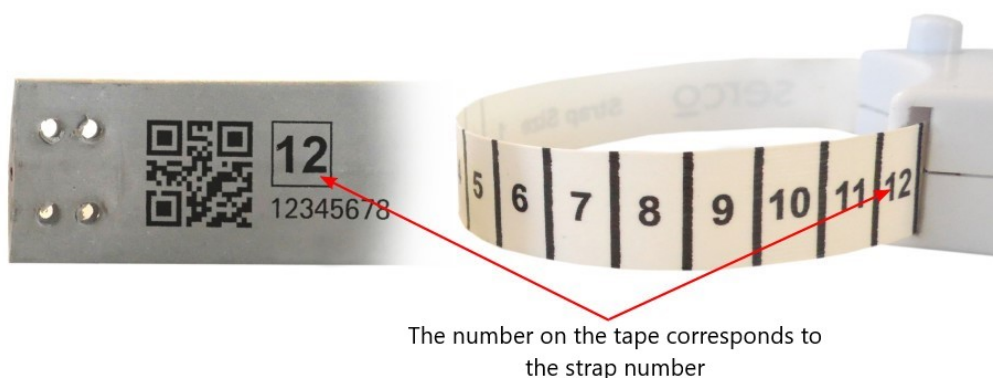


FIGURE 5.3: *Measurement and numbering of the strap*

5.3.2 Installation of the OPT device

1. Insert one end of the carrying strap into the connector located in the OPT housing. The clip is asymmetrical and can only be inserted into the connector one way. There should be an audible click

when the strap is pressed into place - pull (not too hard) the strap to ensure that it is firmly attached to the OPT housing.



FIGURE 5.4: *Strap inserted with one end into the socket in the OPT housing*



Attention!

At this stage, only one side of the carrying strap should be attached to the OPT housing. The other side should remain unattached until the strap is wrapped around the leg.

2. Place the OPT on the outside of Monitored Person's leg (just above the ankle) and wrap the strap around the leg.



FIGURE 5.5: *OPT montage*

3. Insert the other side of the carrying strap into the OPT housing connector. When the strap is pressed down there should be an audible click, indicating that the clip is secured in the connector. By pulling lightly on the strap, ensure that it is firmly secured in the housing.
4. Check the fit of the OPT. It must not be worn too loose or too tight.



FIGURE 5.6: *Properly fitted OPT*

5.4 Operation

The OPT device, from the moment it is turned on and installed in monitoring, enables continuous supervision of the Monitored Person. Regular charging of the OPT device is required (charging is described in section 5.4.1. Charging the OPT device, p. 20). The device cannot be switched off by the Monitored Person.

5.4.1 Charging the OPT device

1. Connect the PP to the OPT device so that the PP latches make a distinctive sound and the contacts on the PP and OPT connect to each other (Figure 3.1 OPT device with Power Pack charger (first photo from left), Power Pack charger (middle photo) and OPT device without charger (last photo), pp. 10).
2. Plug the PP power supply into a mains socket.
3. Charge the OPT until the charged battery is signalled (see section 4.2 Event signalling, pp. 13).
4. Once charged, disconnect the PP from the power supply and then remove it from the OPT.

**Attention!**

The PP must be connected to the OPT device within 1 hour of the low battery indication. A description of the signalling can be found in section 4.2 Event signalling, pp. 13.

**Attention!**

When charging the OPT, avoid exposing the device to direct sunlight or other heat sources.

5.5 Control and inspection

For the inspection and control of the OPT device, the EMS Specialist carries out inspections:

- periodic,
- upon receipt of an alarm from the Monitoring Centre.

5.5.1 Device status details

5.5.2 Alarm

5.5.3 Status of work

5.5.4 Location

5.5.5 Violation flags and their interpretation

5.6 Deinstallation

5.6.1 Switching off

ESM specialist have to power off device using external application.

5.6.2 Removing the device

Cut the carrying strap using the scissors provided in the toolkit.

**Attention!**

The strap should be cut approximately halfway along its length, this will make it easier to remove the strap from the OPT device.



FIGURE 5.7: *Cutting the strap*

5.6.3 Removing the carrying strap

To remove the carrying strap from the OPT, use the special strap removal tool provided in the toolkit.

1. Insert one end of the carrying strap into the strap removal tool. The opening in the device housing is profiled so that the strap can only be inserted one way.



FIGURE 5.8: *Correct position of OPT when removing the strap*

2. Press the housing of the OPT device against the tool.
3. Press the lever and slide the housing out of the clip removal device by moving it slightly from side to side. If it is not possible to eject the device, release the lever, press the device housing more firmly against the tool, depress the lever again and attempt to eject the strap again.

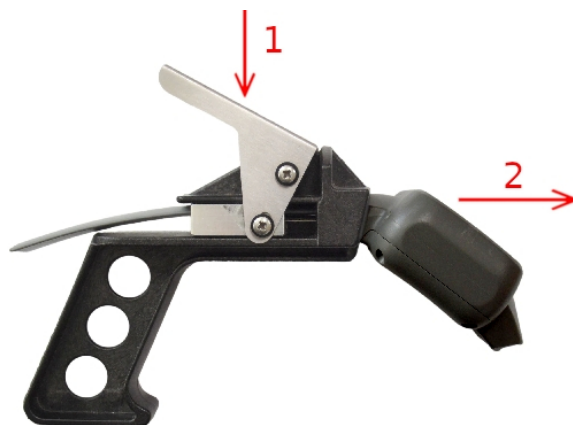


FIGURE 5.9: *Removing the belt*

4. Release the tool lever and pull out the end of the carrying strap.
5. In the same way, remove the other part of the carrying strap.



Attention!

The straps, once removed from the OPT device housing, are not reusable.

5.7 Device and component replacement

Replacement of the device and its components is carried out by EMS Specialist

5.8 Storage and transport

The device should be stored and transported in the packaging provided by the manufacturer. It is recommended to store the unit in storage mode in a temperature range of 10°C to 25°C. If the device is not used for a long period of time, it should be connected to the power supply every 6 months or so to recharge the battery. After a storage period of more than 3 years, it is recommended to replace the battery with a new one.

Disclaimers

[FCC]

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation.

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

NOTE: 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.

[ISED]

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s).

Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Oznaczenie dokumentu: git-black-sde 1770897130