

Service manual

MobilePTS v.2



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1. Application description:

Application MobilePTS is responsible for visualization of current status and assuming control of small mobile battery target pop-ups ZDV_TI_BAT and small small mobile battery target pop-ups with rotation ZDV_TI_BAT_ROT (further just ZDV).
Application is installed on a rugged tablet Fieldbook E1.

2. Application start-up:

Application is launched by clicking an icon on the app list of the Fieldbook E1.



fig.1

As the application launches, a check of Bluetooth availability is triggered. If it's available, application will start-up. If it's unavailable, the application will enable it (if this feature isn't blocked by the tablet itself) and proceed to start-up.

Main screen:

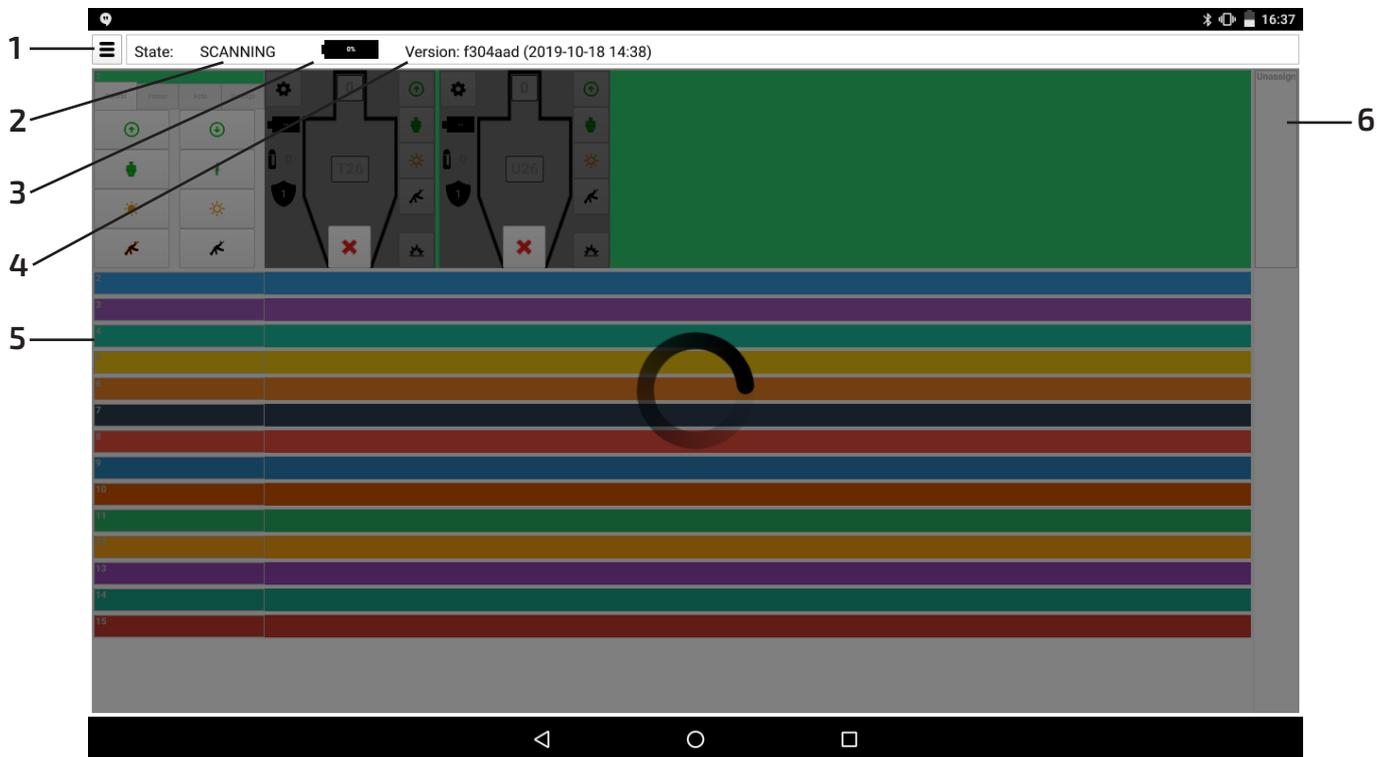


fig. 2

1. Menu

2. Indicator of Wireless converter connection - Gateway (fig. 3)

SCANNING	Connection with Gateway is inactive: - Bluetooth is disabled in tablet settings - Gateway is placed out of the reach of the tablet - Gateway is turned off or the battery is drained
READY	Connection with Gateway is active

3. Battery indicator of Gateway

	Unknown battery status - Connection with Gateway is inactive
	Current battery status

4. Application version indicator

5. List of groups for ZDV assignment

6. List of available and unassigned ZDVs



Wireless converter - Gateway
fig. 3

3. Group creation

The application allows assignment of individual ZDVs into 15 groups. Each group can be empty or contain several ZDVs.

The purpose of assigning ZDVs into groups is ease of control. Individual commands (raise up, fold down, etc.) are sent to whole group with one click, instead of commanding ZDVs one by one. Groups also allow mode *Parkur* and mode *Auto* control (these modes are described in individual sections (pages 9-10)).

Group assigning procedure:

1. Press and hold a finger inside chosen ZDV
2. Drag ZDV into desired group
3. Release the finger -> ZDV is assigned to a group

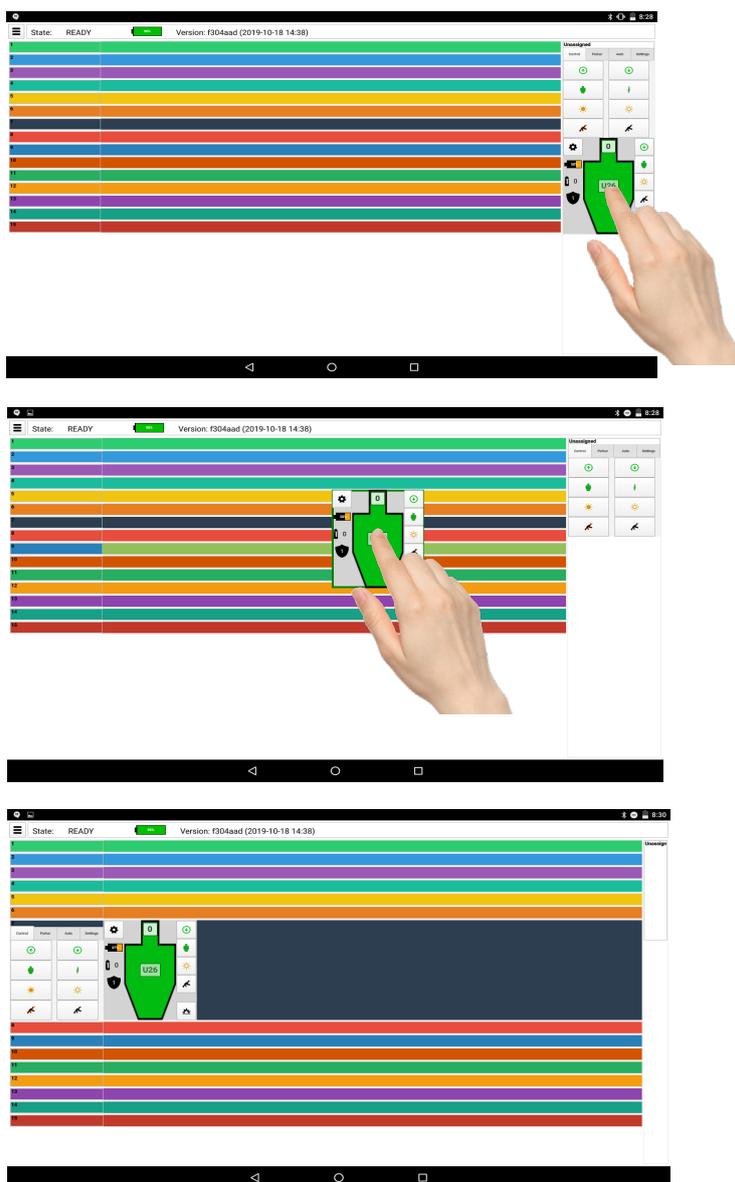
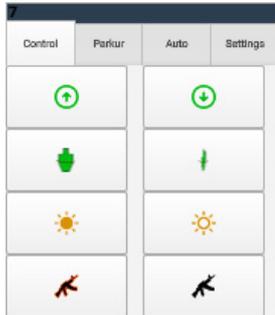


fig. 4

4. Group control

ZDVs in a group allow for group control i.e. all assigned ZDVs are controlled simultaneously.

Available group control commands:

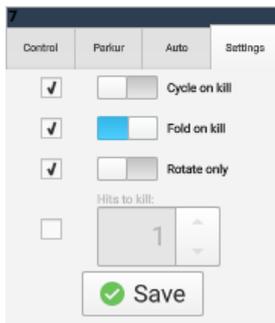


Raise/fold down

Rotate

Lights on/off

Shooting imitation on/off



Cycle on kill

Fold on kill

Rotate only

Hits to kill setting

Save changes

fig.5

Clicking on chosen icon sends a command to all ZDVs in group. Each ZDV announces the execution of the command individually (fig. 5)

5. Individual control

Each ZDV can be controlled individually even if it's assigned to a group. The device is controlled with commands displayed on the right side of the icon (fig. 6). During individual control of ZDV, the user can configure its behavior (what it's supposed to do after a registered hit).

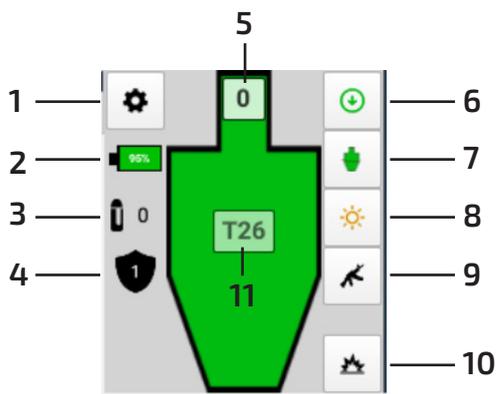


fig.6

1. Parameter settings of ZDV
2. Battery status of ZDV
3. Hit counter (since last elevation)
4. Hits to kill
5. Kill counter
6. Raise/fold down
7. Rotate
8. Lights on/off
9. Shooting imitation on/off
10. Smoke shell initiation
11. ZDV designation

Attention: For safety reasons, it is possible to turn the arm into 0 degree position (target hidden in the X axis) only when the arm of the pop-us is folded (target is raised in the Y axis).

If the arm is rotated in the 0 degree position (target hidden in the X axis) and the user executes a command for elevation of the arm (tilting of the target in the Y axis) it will automatically turn into 90 degree position and then folds down, to prevent any damage to the device.

6. ZDV modes

ZDV can be set into 3 modes:

1. *Cycle on kill* - ZDV will fold down and raise up again after receiving required number of hits to kill
2. *Fold on kill* - If the option 3 *Rotate only* is enabled -> sets whether the target should rotate or not after a kill
If the option 3 *Rotate only* is disabled -> sets whether the target should fold down or stay raised after a kill
3. *Rotate only* - If enabled, the target only rotates around its axis and doesn't fold down



fig. 7

6.1 Cycle on kill

If the *Cycle on kill* mode is enabled, ZDV will fold down after required number of hits and raise up again. The user can choose how many hits are needed in order to kill the target. The range is between 1 and 255.

ex.1:
ZDV is in the *Cycle on kill* mode and the required number of hits is set to 1 (number "1" appears in part 4 of fig.6). A shooter fires at the target, hits it, it folds down and the kill counter (part 5 of fig.6) is set to "1". After that the target raises up automatically. The gunner shoots, hits and the target folds down again. The kill counter is set to "2" and the target raises up.

ex.2:
ZDV is in the *Cycle on kill* mode and the required number of hits is set to 10. (number "10" appears in part 4 of fig.6). A shooter fires at the target, hits it. The target stays raised, hit counter is set to "1" (part 3 of fig.6). The gunner shoots again, hits, the hit counter is set to "2", the target remains raised... The target is hit 10th time. The kill counter (part 5 of fig.6) is set to "1" and the target folds down.

Note: after successful hit, ZDV in application flashes red light and makes acoustic signal

If the mode *Cycle on kill* is disabled, after achieving the required number of hits, ZDV folds down and remains folded (or it rotates according to mode *Rotate only*).

6.2 Rotate only

This mode determines whether the target should fold down or rotate after a successful hit. If the mode is enabled, the target rotates so that the shooter is not able to see it instead of folding down, after reaching required number of hits. This mode can be combined with modes *Cycle on kill* and *Fold on kill*.

If the mode is disabled, the target folds down instead of rotating, after reaching required number of hits. This mode can be combined with modes *Cycle on kill* and *Fold on kill*.

6.3 Fold on kill

This mode determines whether the target should behave as stationary (with hit counter) or fold down/rotate.

If mode *Rotate only* is enabled -> sets whether the target should rotate or not

If mode *Rotate only* is disabled -> sets whether the target should fold down or remain raised

7. Hits to kill and sensor sensitivity settings

Hits to kill setting:

1. Click the settings icon



2. Choose a number between 1-255



3. Save the setting with the *Save* button



4. To cancel press the *Cancel* button



Sensor sensitivity setting:

1. Click the settings icon



2. Choose a number between 1-100%



3. Save the setting with the *Save* button



4. To cancel press the *Cancel* button



Note: 100% means very high sensitivity, the sensor registers even weak hits

8. Parkur

Parkur is one of the automatic modes of control. The mode can be enabled for ZDV assigned to a group. The tablet allows start of 15 independent *Parkurs* (the tablet allows a maximum of 15 groups of ZDVs). However, since one ZDV can only be assigned to one group, it is impossible to add one ZDV to two *Parkurs* at the same time.

In the *Parkur* mode, a time $T[s]$ is set, this time determines the length of exposure of the target. After a successful hit, the target folds down or rotates (according to the *Rotate only* setting), a kill is counted and next ZDV is exposed. If the shooter doesn't hit the target before the time expires, it automatically folds down or rotates (according to the *Rotate only* setting), kill is not counted and next ZDV is exposed.

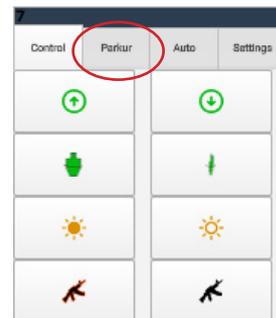
The order of ZDVs is determined by their order in the group on the tablet. If the user wants to change the order of activation, ZDV order in group has to be changed accordingly.

After activation and folding down or rotation (according to the *Rotate only* setting) of the last ZDV in the group, the *Parkur* finishes on its own or can be canceled by the user by pressing the *Stop* button.

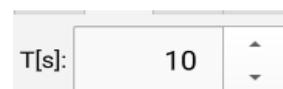
The user can enable mode *MultiParkur*. This mode allows for a repeated cycle of the *Parkur* mode. After the activation and folding down or rotation (according to the *Rotate only* setting) of the last ZDV it starts from the first ZDV again. It can be enabled by the *MultiParkur* switch. *MultiParkur* is finished by pressing the *Stop* button.

Parkur mode initialization:

1. In group control click the tab *Parkur*



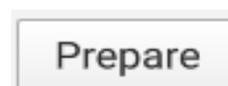
2. Set the time in seconds



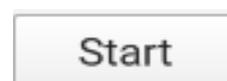
3. Enable the *MultiParkur* option if needed



4. Press the *Prepare* button to send a command to the ZDV



5. After successful initialization, start the *Parkur* mode by pressing the *Start* button



6. Cancel the *Parkur* mode by pressing the *Stop* button



9. Auto

Auto is a second mode for automatic control of ZDV. This mode can be enabled for ZDV assigned to a group. Tablet allows for 15 independent *Auto* modes (tablet allows a maximum of 15 groups of ZDVs). An individual ZDV can only be assigned to one group, therefore it can't be in two *Auto* modes at the same time.

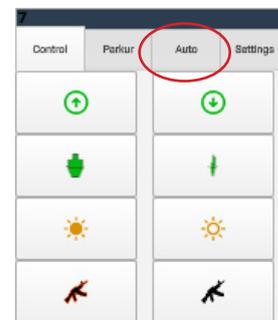
In the *Auto* mode a time *Tup*: [s] is set, which determines the length of exposure of the target and a time *Tdn*: [s], which sets how long the target remains folded down or rotated (according to the *Rotate only* setting). After launch with the *Start* button, all ZDVs fold down or rotate (according to the *Rotate only* setting), so that they all start in the same position. Afterwards all targets are raised.

After a successful hit, the target automatically folds down or rotates (according to the *Rotate only* setting) and counts a kill. After the *Tdn* duration elapses, the target is exposed again. If the shooter doesn't hit the target before the *Tup* time expires, it will automatically fold down or rotate (according to the *Rotate only* setting), kill is not counted. After the *Tdn* duration elapses, the target is exposed again.

Auto mode is active from the beginning until it is canceled by pressing the *Stop* button.

Auto mode initialization:

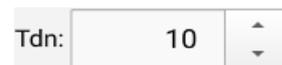
1. In group control menu click the *Auto* tab



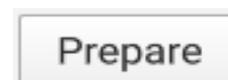
2. Set the time of exposure in seconds



3. Set the concealment time in seconds



4. Press the *Prepare* button to send a command to the ZDV



5. After successful initialization, start the *Auto* mode by pressing the *Start* button



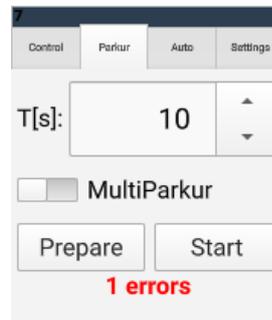
6. Cancel the *Auto* mode by pressing the *Stop* button



Communication error during initialization of Parkur/*Auto* mode :

In case the command *Prepare* is not correctly delivered to all of ZDVs in a group a *X errors* message is displayed, where *X* is the number of undelivered commands.

In such case another execution of *Prepare* command is needed. If the error remains, a check of ZDVs is required.



10. Display of devices

After initial launch of the application, the discovered ZDVs appear in the *Unassigned* section (part 6 of fig. 2). If the user doesn't assign them into groups, they will appear in the *Unassigned* section again after closing and relaunching the application.

If a device is assigned to a group, it will remain in that group even after the tablet is turned off. After the tablet is powered on again, it will appear in the same group. If the tablet has not yet detected this ZDV, it will remain grayed out and a button for its removal will appear (fig. 7). If the device is detected, it will return to the standard state. If it doesn't respond within several minutes, the communication with ZDV has been lost. The operator should investigate possible sources of the problem (ZDV turned off, drained battery, etc.). If the operator determines the device as not operational, it can be removed from the group by clicking the "X" button on the ZDV icon.

If there is more than one unresponsive ZDV, they can be removed collectively, by choosing the *Remove dead nodes* (fig. 8) tab from the menu. For example: user doesn't use ZDVs from previous practice, they remain grayed out in the application, they are removed collectively and new ones are assigned to the groups.

The retention of group assignment of individual ZDVs is convenient for repeated practices, since consecutive launches of the application don't require reassignment of the devices and potential issues with ZDVs are easier to detect.

If ZDV is not assigned to a group and is just displayed on the list in the side section, it will be erased automatically from the list if communication is not established within 60 seconds.

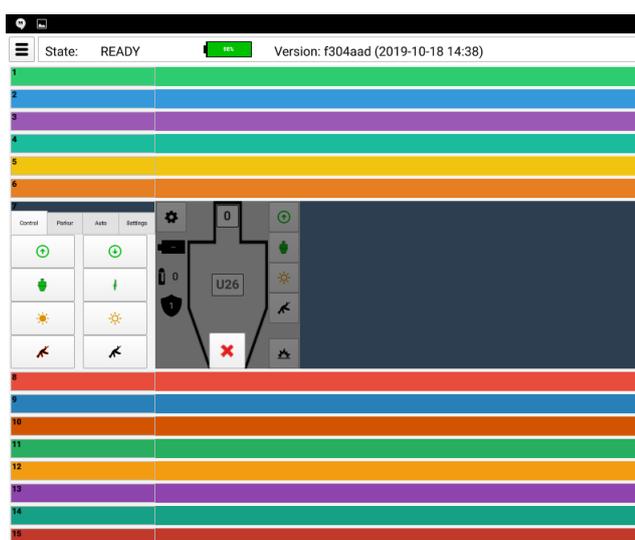


fig. 7

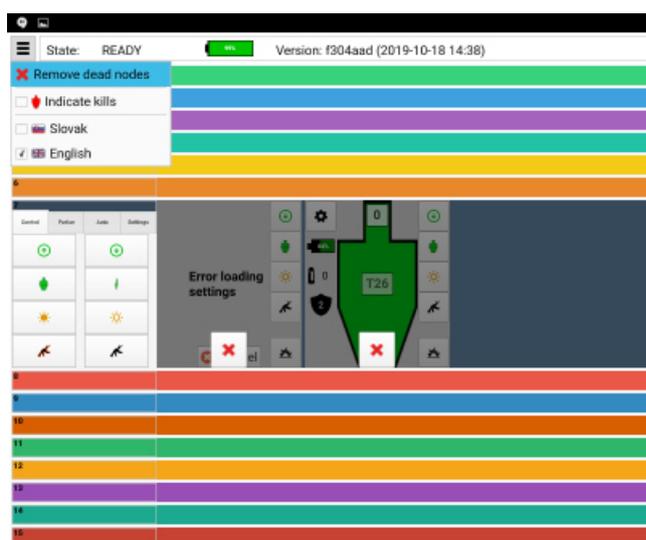
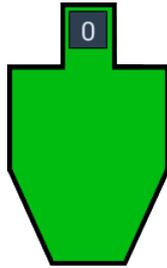


fig. 8

11. States of ZDV



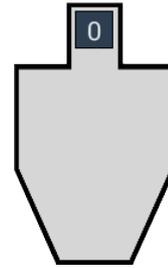
target:
raising



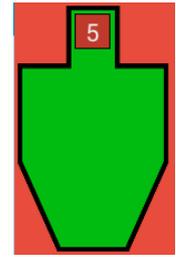
target:
raised



target:
folding down



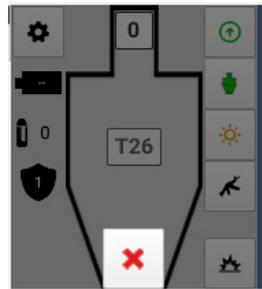
target:
folded



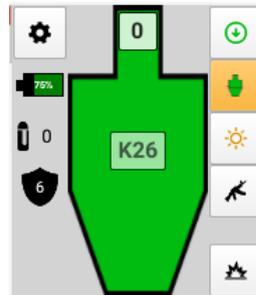
target:
raised, hit
(flashing)



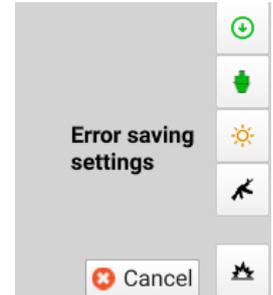
rotated
target



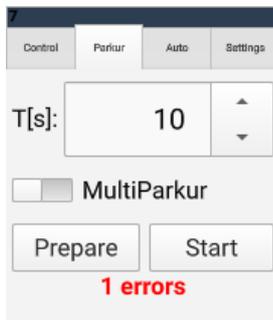
communication lost



command not
received



Error saving
settings



Prepare command delivery
failed while launching the
Parkur/*Auto* mode



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