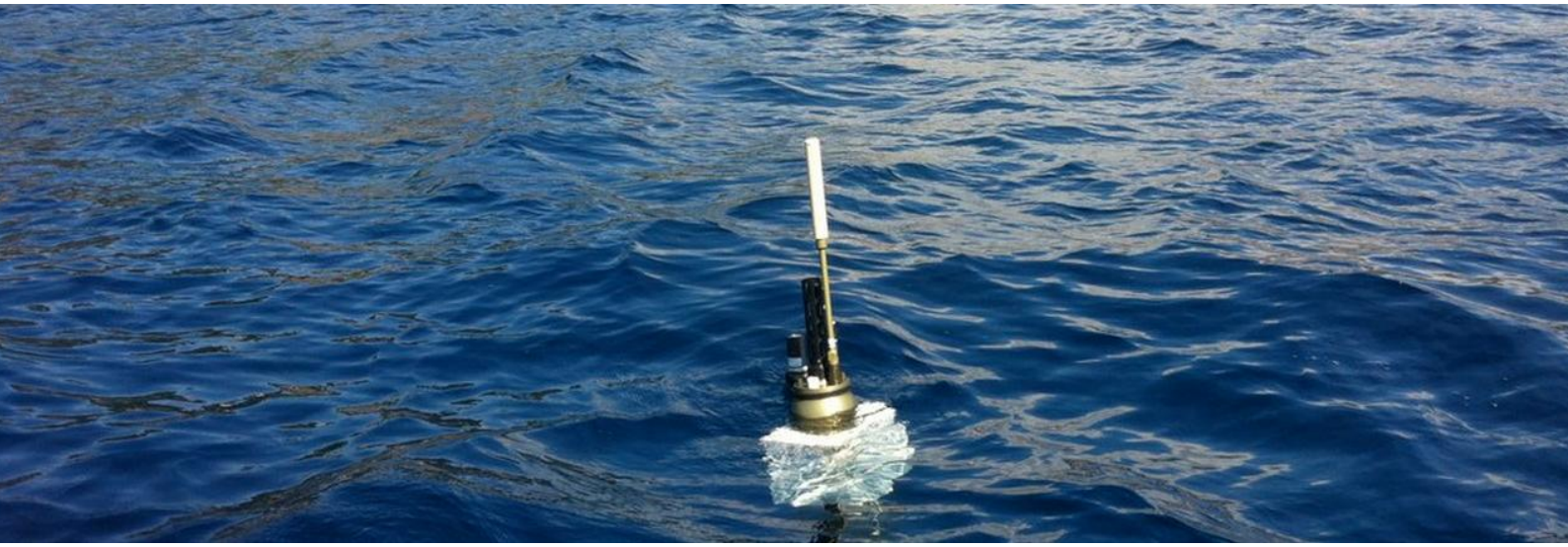
APMT Profiler – Multi-Parking Capabilities

AUTOMATED **M**ULTI-**T**ASK **P**ROFILER



33-16-062_APMT_Multi-Parking_Capabilities
Revision 1.0 (2020-05-12)

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1. Revision history

Revision	Release date	Notes	Author
1.0	2020-05-11	Original	C. SCHAEFFER

2. Introduction

The “Multi-Parking” option is designed to allow the acquisition of data over time at different depths during the same dive of the float. This makes it possible to observe the evolution of water layers in an area on a limited time scale.

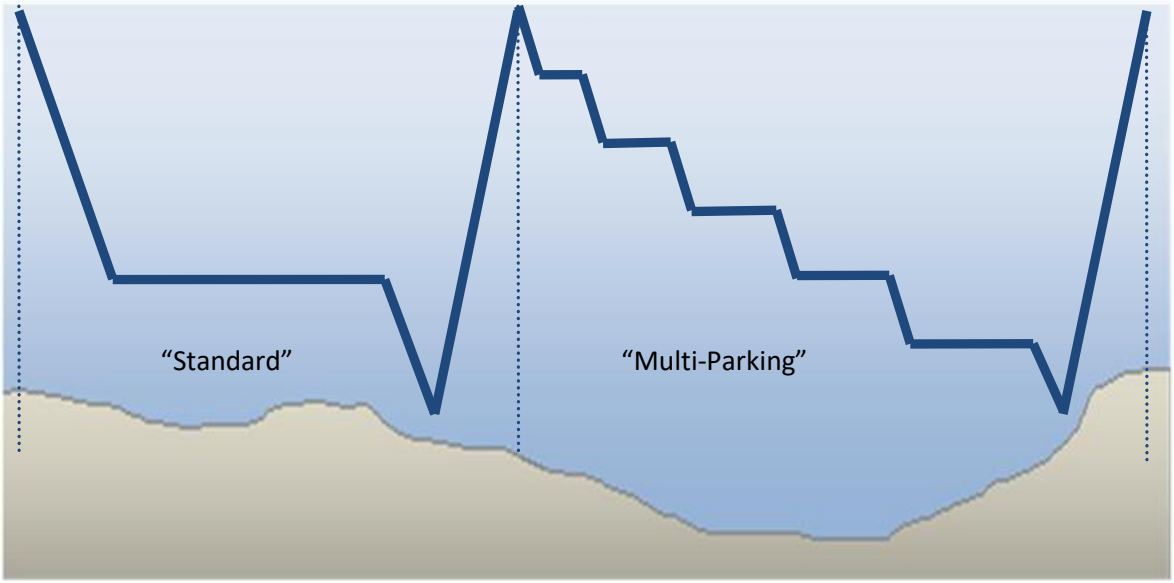
3. Multi-Parking feature

3.1 Overview

The “Multi-Parking” behavior consists in repeating descents and submerged drifts stages before reaching the measurement depth and then ascending to the surface. Up to 5 different parking stages can be used in a profile.

During the drift at a parking depth, the float checks the external pressure and adjusts its buoyancy to stay close to the target depth.

Data can be collected during each descent and parking drift stage.



--- Figure 1. Overview of “Multi-Parking” behavior ---

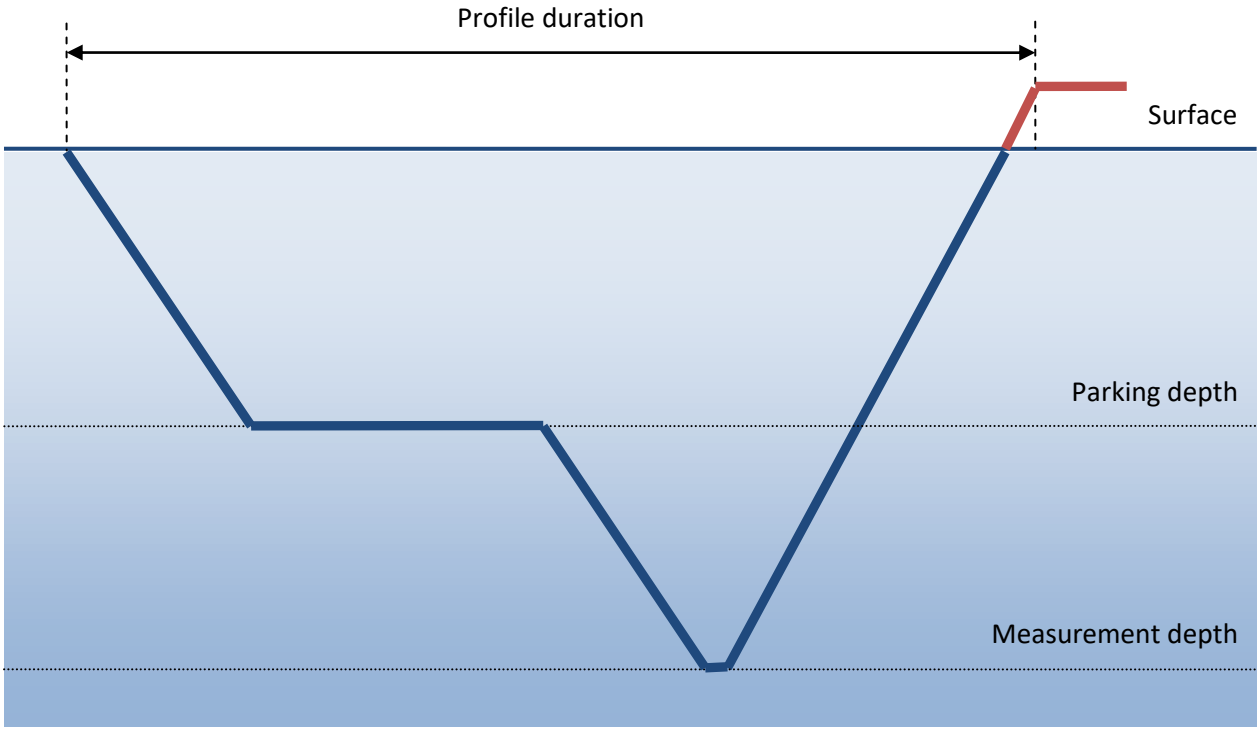
The “Multi-Parking” mode can be activated independently for each profile of a cycle.

Target depth and parking duration settings of each parking stage are independent for each profile.

3.2 Setting a profile

3.2.1. "Standard" mode

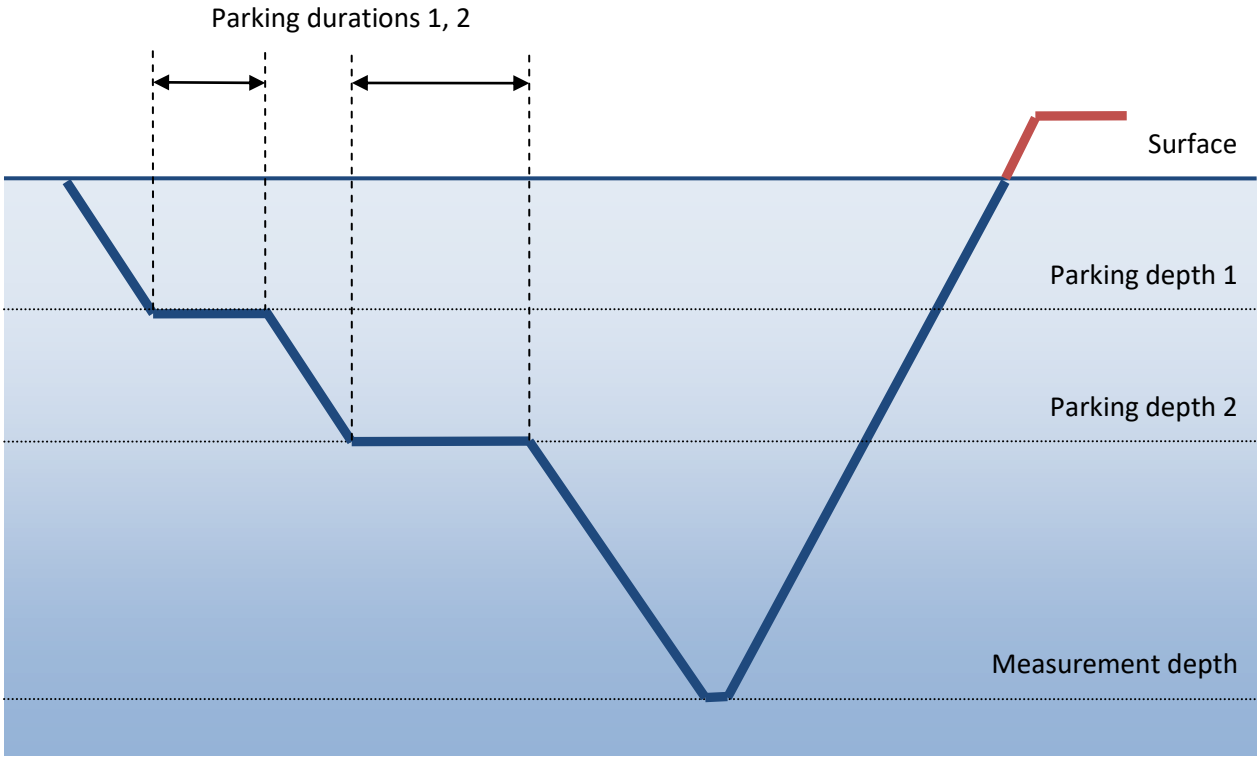
In "standard" mode, a profile can be set so that the float performs a parking stage or not. This is achieved by adjusting the profile duration and/or surface synchronization time. In this mode, the parking duration is not set by the user, but calculated by the float itself.



--- Figure 2. "Standard" profile ---

3.2.2. "Multi-Parking" mode

In "Multi-Parking" mode, a profile can be set so that the float performs several (from2 to 5) parking stages. The parking settings are independent for each parking stage. In this mode, the parking durations are set by the user.



--- Figure 3. "Multi-Parking" profile ---

Each parking stage is completely defined by its target depth and its duration. The settings of a "Multi-Profile" differ from a "standard" one by the use of list of values instead of a single value.

In "Multi-Parking" mode, values in lists MUST be separated by semicolon character.

[PATTERN_XX]

No.	Comment	Value
1	Parking drift depth (dbar)	100 ; 200
8	Parking durations (s)	3600 ; 7200

Parking 1 settings
100 dbar during 1 hour

Parking 2 settings
200 dbar during 2 hours

In "Multi-Parking" mode, the list of parking drift depths MUST be sorted with increasing values.

3.2.3. Switching from one mode to another

The “Multi-parking” mode is activated by using a pressure list for parameter [PATTERN_XX].P1 rather than a unique pressure. When activated, [PATTERN_XX].P8 is used to specify durations of each parking stage while [PATTERN_XX].P3 is unused.

Activate “Multi-Parking”

[PATTERN_XX]

No.	Comment	Value
1	Parking drift depth (dbar)	200
2	Measurement drift depth (dbar)	400
3	Pattern duration (s)	14400
8	Parking durations (s)	~~3600;7200~~

Value
100;200
400
~~14400~~
3600;7200

Deactivate “Multi-Parking”

3.3 Managing parking depth tolerance

Repositioning during drift consists in maintaining the float around a set depth.

The operation is as follows:

- Pressure monitoring at fixed time intervals
- Repositioning if the current pressure deviates from the set point by more than the repositioning tolerance
- Repositioning completed when the current position is deviated from the set point by less than the positioning tolerance

In “Standard” mode, user can set tolerance for parking stage with parameters [TECHNICAL].P6/P7.

In “Multi-Parking” mode, user can set specific tolerance for each parking stage. This is achieved by the use of list of values instead of a single value for parameters [TECHNICAL].P23/P24.

[TECHNICAL]

No.	Comment	Value
23	Pressure tolerance before repositioning in park (dbar)	30 ; 50
24	Pressure tolerance for positioning in park (dbar)	20 ; 30

Parking 1 settings
30 dbar/20 dbar

Parking 2 settings
50 dbar/30 dbar

3.4 Data management

Data acquisition strategies and treatments are selected according to the navigation stage and zone:

- Settings associated with parking drift are common to all parking drift stages (same power mode, acquisition interval and raw treatment)
- Settings associated with a zone during descent are common to all descent stages in that zone (same power mode, acquisition interval and treatment)

4. Parameter setting

4.1 Related parameters

[SYSTEM]

No.	Comment	Limitation
0	"Multi-Parking" mission script	128 characters

[PATTERN_XX]

No.	Comment	Limitation
0	Enable/disable pattern	[True/False]
1	Parking drift depth (dbar)	[100-2000]
2	Measurement drift depth (dbar)	[100-2000]
3	Pattern duration (s)	[0-2419200 (28 days)]
4	Time of presence at the surface	hh:mm:ss
5	Enable/disable GPS position acquisition	[True/False]
6	Enable/disable transmission session	[True/False]
7	Enable/disable surface presence synchronization	[True/False]
8	Parking durations (s)	[3600-2419200 (28 days)]

[TECHNICAL]

No.	Comment	Limitation
6	Pressure tolerance before repositioning in "standard" park (dbar)	[2-100]
7	Pressure tolerance for positioning in "standard" park (dbar)	[2-100]
23	Pressure tolerance before repositioning in "multi-park" (dbar)	[2-100]
24	Pressure tolerance for positioning in "multi-park" (dbar)	[2-100]

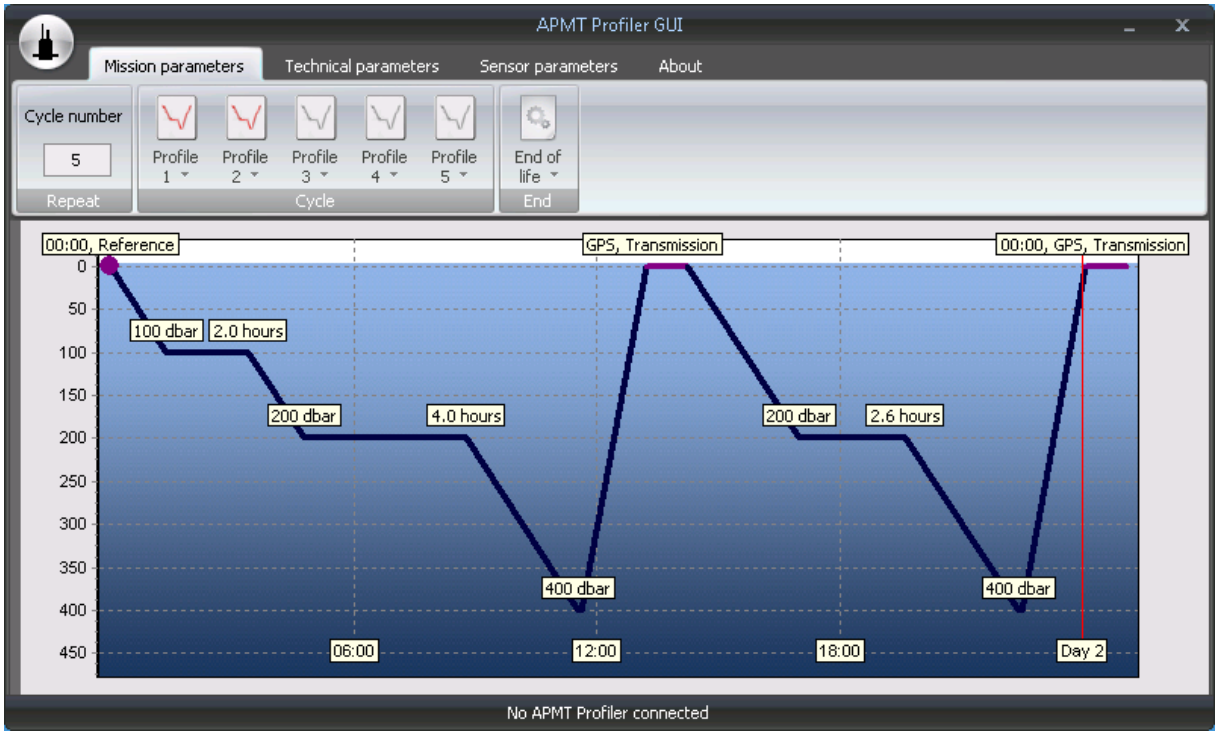
Note: For more details on parameters refer to "33-16-048_Parameter_Set" manual.

5. Appendices

5.1 Graphical User Interface

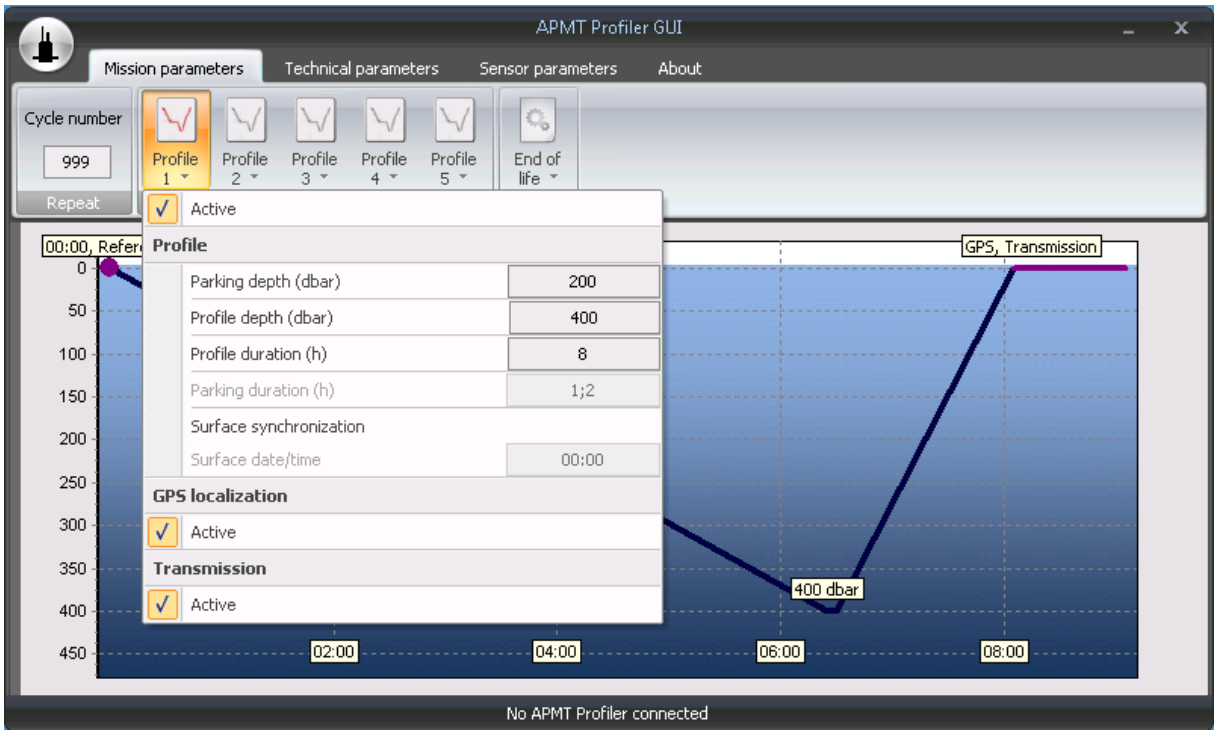
5.1.1 Profile representation

Each parking stage is represented by its target depth and duration.

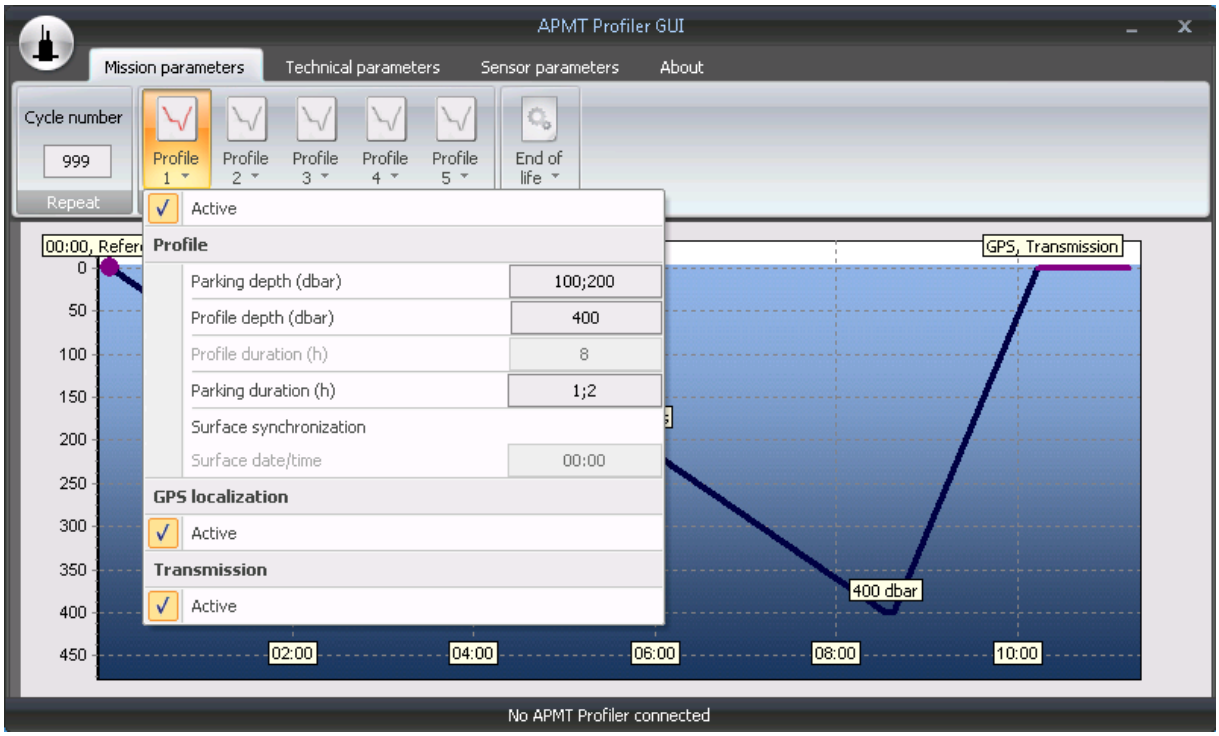


5.1.2 Switching from one mode to another

When a profile is set in “Standard” mode (single parking depth), the parking duration is disabled.



When a profile is set in “Multi-Parking” mode (parking depths list), the parking duration is enabled while the profile duration is disabled.



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