

**Package** [dev.robocode.tankroyale.botapi](#)

## Class Constants

java.lang.Object  
dev.robocode.tankroyale.botapi.Constants

```
public final class Constants
extends java.lang.Object
```

Constants.

### Field Summary

#### Fields

Modifier and Type	Field	Description
static int	<a href="#">ACCELERATION</a>	Acceleration is the increase in speed per turn, which adds 1 unit to the speed per turn when the bot is increasing its speed moving forward.
static int	<a href="#">BOUNDING_CIRCLE_RADIUS</a>	The radius of the bounding circle of the bot, which is a constant of 18 units.
static int	<a href="#">DECELERATION</a>	Deceleration is the decrease in speed per turn, which subtracts 2 units to the speed per turn when the bot is decreasing its speed moving backward.
static double	<a href="#">MAX_BULLET_SPEED</a>	The maximum bullet speed is 19.7 units per turn.
static double	<a href="#">MAX_FIREPOWER</a>	The maximum firepower, which is 3.
static int	<a href="#">MAX_GUN_TURN_RATE</a>	The maximum gun turn rate, which is a constant of 20 degrees per turn.
static int	<a href="#">MAX_RADAR_TURN_RATE</a>	The maximum radar turn rate, which is a constant of 45 degrees per turn.

<code>min.</code>		<code>max.</code>
static double	<b>MIN_BULLET_SPEED</b>	The minimum bullet speed is 11 units per turn.
static double	<b>MIN_FIREPOWER</b>	The minimum firepower, which is 0.1.
static int	<b>SCAN_RADIUS</b>	The radius of the radar's scan beam, which is a constant of 1200 units.

**Method Summary**

**Methods inherited from class java.lang.Object**

clone, equals, finalize, getClass, hashCode, notify, notifyAll, toString, wait, wait, wait

**Field Detail**

**BOUNDING\_CIRCLE\_RADIUS**

```
public static final int BOUNDING_CIRCLE_RADIUS
```

The radius of the bounding circle of the bot, which is a constant of 18 units.

The bounding circle of a bot is a circle going from the center of the bot with a radius so that the circle covers most of the bot. The bounding circle is used for determining when a bot is hit by a bullet.

A bot gets hit by a bullet when the bullet gets inside the bounding circle, i.e. the distance between the bullet and the center of the bounding circle is less than the radius of the bounding circle.

**See Also:**

[Constant Field Values](#)

The radar is used for scanning the battlefield for opponent bots. The shape of the scan beam of the radar is a circle arc ("pizza slice") starting from the center of the bot.

Opponent bots that get inside the scan arc will be detected by the radar.

The radius of the arc is a constant of 1200 units. This means that that the radar will not be able to detect bots that are more than 1200 units away from the bot.

The radar needs to be turned (left or right) to scan opponent bots. So make sure the radar is always turned. The more the radar is turned, the larger the area of the scan arc becomes, and the bigger the chance is that the radar detects an opponent. If the radar is not turning, the scan arc becomes a thin line, unable to scan and detect anything.

**See Also:**

[Constant Field Values](#)

## MAX\_TURN\_RATE

```
public static final int MAX_TURN_RATE
```

The maximum possible driving turn rate, which is max. 10 degrees per turn.

This is the max. possible turn rate of the bot. Note that the speed of the bot has a direct impact on the turn rate. The faster the speed the less turn rate.

The formula for the max. possible turn rate at a given speed is:  $\text{MaxTurnRate} - 0.75 \times \text{abs}(\text{speed})$ . Hence, the turn rate is at max. 10 degrees/turn when the speed is zero, and down to only 4 degrees per turn when the bot is at max speed (which is 8 units per turn).

**See Also:**

[Constant Field Values](#)

## MAX\_GUN\_TURN\_RATE

```
public static final int MAX_GUN_TURN_RATE
```

The maximum gun turn rate, which is a constant of 20 degrees per turn.

**See Also:**

[Constant Field Values](#)

See Also:

[Constant Field Values](#)

**MAX\_SPEED**

```
public static final int MAX_SPEED
```

The maximum absolute speed, which is 8 units per turn.

See Also:

[Constant Field Values](#)

**MIN\_FIREPOWER**

```
public static final double MIN_FIREPOWER
```

The minimum firepower, which is 0.1. The gun will not fire with a power that is less than the minimum firepower, which is 0.1.

See Also:

[Constant Field Values](#)

**MAX\_FIREPOWER**

```
public static final double MAX_FIREPOWER
```

The maximum firepower, which is 3. The gun will fire up to this power, even if the firepower is set to a higher value.

See Also:

[Constant Field Values](#)

**MIN\_BULLET\_SPEED**

```
public static final double MIN_BULLET_SPEED
```

**See Also:**

[Constant Field Values](#)

## MAX\_BULLET\_SPEED

```
public static final double MAX_BULLET_SPEED
```

The maximum bullet speed is 19.7 units per turn.

The maximum bullet speed is the fastest possible speed that a bullet can travel and is defined by the minimum firepower. Max. bullet speed =  $20 - 3 \times \text{min. firepower}$ , i.e.  $20 - 3 \times 0.1 = 19.7$ . The lesser power, the faster the bullet speed will be.

**See Also:**

[Constant Field Values](#)

## ACCELERATION

```
public static final int ACCELERATION
```

Acceleration is the increase in speed per turn, which adds 1 unit to the speed per turn when the bot is increasing its speed moving forward.

**See Also:**

[Constant Field Values](#)

## DECELERATION

```
public static final int DECELERATION
```

Deceleration is the decrease in speed per turn, which subtracts 2 units to the speed per turn when the bot is decreasing its speed moving backward. This means that a bot is faster at braking than accelerating forward.

**See Also:**

[Constant Field Values](#)

ALL CLASSES

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