VR-Engage

First Experience

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1. VR-Engage First Experience

Thank you for deciding to try out VR-Engage. VR-Engage is a multi-role virtual simulator developed for use in training simulations or laboratory experimentation. VR-Engage lets users play the role of a first person human character, a ground vehicle driver, gunner or commander, or the pilot of a fixed wing aircraft or helicopter.

VR-Engage is built with the game quality 3D graphics of VR-Vantage, the simulation engine from VR-Forces, and the network interoperability of VR-Link. VR-Engage is a stand-alone application. It can interoperate with any simulation using DIS or HLA. However, when installed with a compatible version of VR-Forces, you can reap the benefits of their common system architecture, including scenario creation, terrain agility, common terrains, models, and configurations, and common representation of the environment.

Before you begin, install and license the software. Please see Section A.1, "Installing VR-Engage," for instructions. If you want to control the LAV entity, as described in this guide, you must connect a game controller. VR-Engage is configured for the Logitech F310 and F710 game controllers and the G27 Steering Wheel. Please contact support@mak.com for help configuring other DirectInput devices.

When you are ready, this guide will help you learn how to:

- Walk around on the terrain.
- Open a door.
- Fire on targets.
- Embark on a truck as a passenger.
- Change roles to drive a light armored vehicle (LAV).
- Damage a building in the terrain.
- Experience a high fidelity physics model.
- Embark on a helicopter.
- Parachute out of a helicopter.
- Fly a fighter jet.

1.1. Start VR-Engage and Load a Scenario

Let's start by loading a scenario that has a cast of humans and vehicles that you can control and interact with.

The tutorials in this guide require you to run a VR-Forces scenario. You must have a VR-Forces simulation engine license to run the scenario. The VR-Engage product does not include a VR-Forces license.

If you do not have a VR-Forces license, you can run VR-Engage, choose a terrain database to simulate on, create and place an entity, and control that entity. VR-Engage can only simulate and control a single entity at a time. When you change role and create a different entity to simulate, the entity you were previously simulating is deleted and replaced by the new one.

For details about license issues, please see Section 1.5.3, "License Requirements for Hosting a VR-Forces Session," in *VR-Engage Users Guide*.

When you start VR-Engage, it looks for an instance of VR-Engage that is already running or an instance of VR-Forces that is running. If it finds one, it immediately connects to that session, loads the terrain it is using, and then asks you what character you want to control. If it does not find a session, it stops and ask you what to do.

1. Start VR-Engage. On the Start menu, choose **MAK Technologies** → **VR-Engage**. (If you just have a license for VR-Engage Ground, choose that instead of VR-Engage.) The VR-Engage window opens. The Searching for Session screen opens (Figure 1-1).

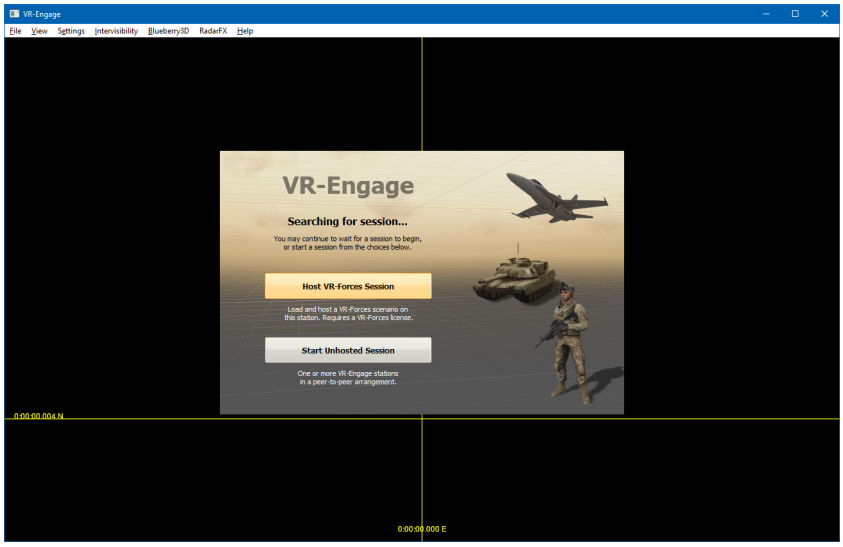

Figure 1-1. Searching for Session

2. Click Host VR-Forces Session. This option lets you load a scenario that was created using VR-Forces and provided with VR-Engage. The Host a VR-Forces Session dialog box opens (Figure 1-2).

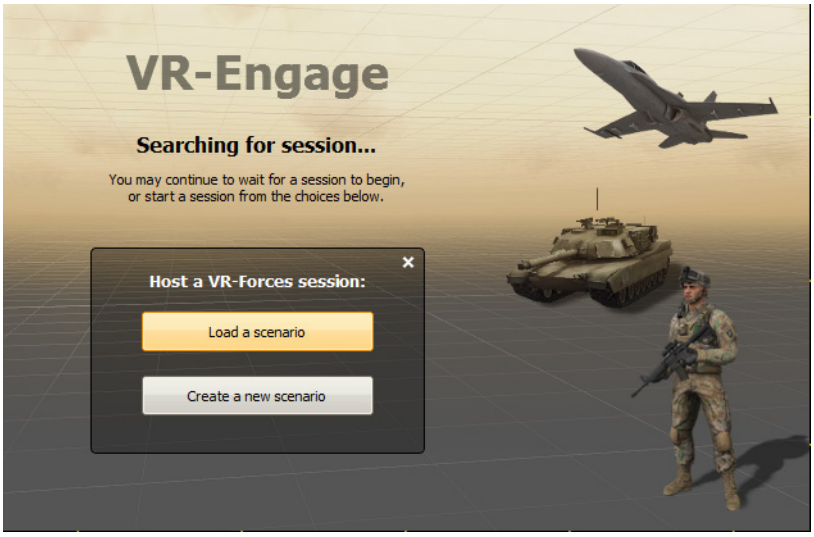

Figure 1-2. Host a VR-Forces session dialog box

3. Click Load a Scenario. The Choose a Scenario for this Session dialog box opens (Figure 1-3).

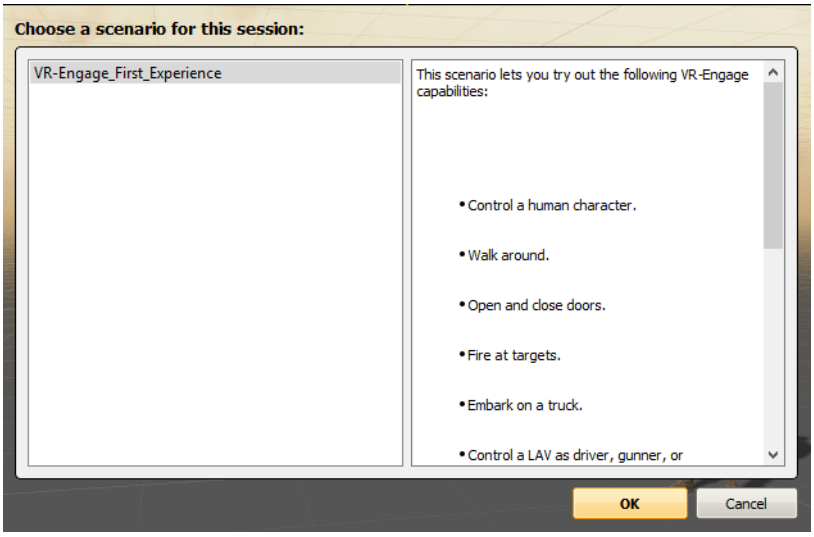

Figure 1-3. Choose a scenario for this session dialog box

4. Select VR-Engage_First_Experience.
5. Click OK. The terrain and scenario load. The Choose Role Panel is displayed (Figure 1-4). It lists the characters that you can create if you want to add a new character to the scenario or it lists the characters that are already in the scenario.

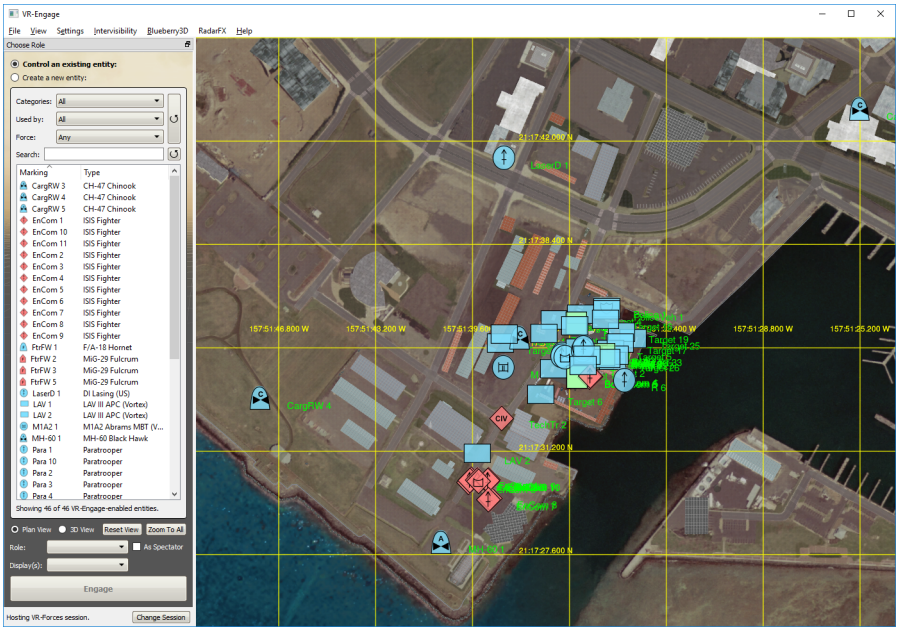

Figure 1-4. Choose Role panel

If you just have a license for VR-Engage Ground, you will get a couple of error messages when the scenario loads telling you that you do not have the licenses for controlling fixed-wing and rotary-wing aircraft. Just click OK. The scenario will run without these licenses.

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6. Select the Attach to an Existing Entity option.
7. In the list of entities, select R1 USMC M4.
8. Click Engage. The display changes to full screen mode and the scenario starts to run.

1.1.1. Walk Around the Warehouse Area

Your character is standing in front of a warehouse with other friendly forces and some vehicles.

1. Use the keyboard, mouse, and Gamepad (if available) to look around and then start walking around. (Please see Table 2-1 for a list of mouse and keyboard mappings and Figure 2-1 for an illustration of Gamepad mappings.)
2. There is a door to the right of the open bays in the warehouse (Figure 1-5). Walk to the door so that you are within a foot or two of it.

Figure 1-5. Warehouse door

As you get close to the door, the Door menu opens (Figure 1-6).

Figure 1-6. Door menu

3. Use the Down arrow key on your keyboard, or the down button on the D-pad to select Open.
4. Press the Right arrow key or the right button on the D-pad. The door opens.
5. Walk into the building.
6. Look around the room. There are a couple of targets.
7. Shoot at the targets. (See the next section for lots of target practice.)
8. Walk into other rooms. Walk up the stairs and explore the upstairs rooms.

1.1.2. Shoot At Targets

The default weapon is a rifle.

1. Walk back out to the parking area in front of the warehouse.
2. Look at the top of the shipping containers. You will see some targets.
3. Align the reticule (the white bulls-eye) of your gun on a target and press **`Spacebar`**, the left mouse button, or the Gamepad trigger to fire it.
4. Walk along the shipping containers, looking at the spaces between them. Watch for some insurgents (Figure 1-7).

Figure 1-7. Insurgents

5. When you see the insurgents, you can fire at them.
6. To aim the rifle, hold down the **`m`** key or the Aim Down Sight button on your Gamepad.

In this scenario, all Friendly forces are invulnerable. So the opposing forces cannot kill you, but you might see a lot of blood being shed if they shoot at you.

1.1.3. Embark On and Disembark From a Vehicle

Your character can embark on and disembark from vehicles. If the vehicle has available roles, such as the LAV, you can assume one of the roles or embark as a passenger. If the vehicle has interior geometry, such as the 5-ton truck or some helicopters, and you embark as a passenger, you will see the interior of the vehicle and other passengers, if they are present. If the vehicle does not have interior geometry, such as the LAV, and you embark as a passenger, you see the vehicle in third-person view.

Your character can also embark on a VR-Forces entity as a passenger and let the VR-Forces simulation engine handle the driving.

1. Look around the parking area until you see a truck with some soldiers sitting in the back.
2. Walk towards the truck. When you get close to the truck, the Embark menu opens (Figure 1-8).

Figure 1-8. Embark menu

3. Select Passenger. Your character embarks on the truck. The truck starts to drive.
4. Look around at the other passengers and at the scenery as the truck drives.
5. When you are ready to get off the truck, press **~** or the Back button on the Gamepad to open the Action menu.
6. Select Disembark. The character is placed off the back of the truck.

Another way to disembark is to use the Action menu to have your character stand up and then turn the character and walk off the back of the truck.

1.1.4. Give Simulated Entities a Task

You can interact with the other entities in a scenario. In this section, you will throw a grenade, which triggers a fire team insertion. Then you will task an entity to move.

1. Press ~ or the Back button on the Gamepad to open the Action menu.
2. Select Weapon.
3. Press the Right Arrow key or the right button on the D-pad until you select Smoke Grenade (Figure 1-9). (You can also change the weapon by pressing the Select Weapon button on the Gamepad.) When you select a grenade, a circular target cursor is displayed. The cursor indicates where the grenade will land.

Figure 1-9. Smoke grenade target

4. Face an open area in the warehouse lot.
5. Use the right thumbstick on your Gamepad to move the target to a spot on the ground.
6. Press the Fire Weapon button or key to throw the grenade. The grenade will emit a smoke plume. After about a minute, a helicopter will approach and a fire team will drop down using fast roping (Figure 1-10).

Figure 1-10. Fast roping

7. After the helicopter flies away, open the Action menu.
8. Select Task Entity and press the Right Arrow or the right button on the D-pad. A list of entities is displayed.
9. Scroll down the list until you can select Unit 1. (The four soldiers who disembarked from the helicopter are named Unit 1, Unit 2, Unit 3, and Unit 4.)
10. Press the Right Arrow or the right button on the D-pad for a list of tasks.
11. Select Move to Location. A waypoint symbol is displayed (Figure 1-11).

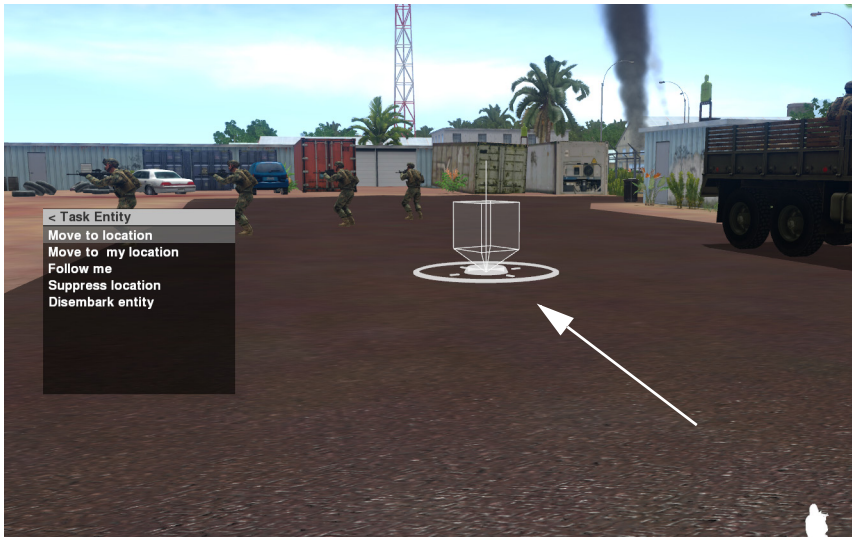


Figure 1-11. Waypoint symbol

12. On the Gamepad, use the right thumbstick to move the waypoint to the location where you want Unit 1 to move.
13. Press the Right Arrow, the right button on the D-pad, or the B button on the Gamepad. Unit 1 moves to the location.

1.1.5. Change Your Role in the Scenario

You can change the role you are playing to be any entity in the scenario.

To change your role:

1. Press **F5** to move the character back to its starting location.
2. Turn your character and walk towards the LAV. When you get close to the LAV, the Embark LAV menu opens (Figure 1-12).

Figure 1-12. Embark LAV menu

3. Select Driver. You are now controlling the driver of the LAV. Use your game controller to drive the LAV.
4. Press the Y button on your Gamepad to switch through different views: a driver's view, a couple of oblique 3rd-person views, and a gunner's view. Note that you can aim and fire the gun, as well as drive.
5. Press the Gamepad Start button to start the motor.
6. Press the Gear Up button to put the LAV into gear.
7. Use the throttle and steering controls to drive towards the exit at the far end of the warehouse area. (It might be easier to navigate through the parking lot using one of the 3rd person views.)
8. Take a left out of the gate onto the road and drive towards the burning vehicle in the road.

While the driver can shoot as well as drive, it is also possible to have another VR-Engage player assume the role of gunner while you are in the role of driver.

1.1.6. Damage Terrain

1. Drive down the road.
2. As you approach the end of the road, you will see an undamaged truck parked next to the building by the tower (Figure 1-13). There is an explosive device underneath the truck that when fired upon will detonate and destroy the adjacent building.

Figure 1-13. Undamaged truck

3. Press the Y button on the Gamepad until you see the Gunner view. It has a square frame with a dot in the center (Figure 1-14).

Figure 1-14. Gunner view

4. Fire on the truck using the 25mm cannon on the LAV. The truck and the building will explode and be damaged (Figure 1-15).

Figure 1-15. Damaged truck and building

1.1.7. Physics Model

There is another LAV vehicle on the road opposite the truck you just destroyed.

1. Change the view of your LAV to a 3rd-person view. (Press the Y button on your Gamepad.)
2. Drive into the other LAV and observe how the physics-based vehicle model realistically models the collision.
3. Drive onto the curb or rugged nearby terrain and observe the individual articulation of the wheels.

1.1.8. Embark on a Simulated Aircraft

1. Drive past the LAV until you see a helicopter on the ground (Figure 1-16).

Figure 1-16. Helicopter

2. On the Action menu, select Disembark. The soldier disembarks from the LAV.
3. Walk over to the helicopter. As you get close to the helicopter, a popup menu opens, with the option to embark as a pilot or passenger (Figure 1-17).

Figure 1-17. Embark on helicopter

4. Select Passenger. The soldier embarks on the helicopter. The helicopter automatically takes off.
5. Once inside, note that you can look around, stand up, and walk around. (Take care to stay inside the helicopter - it is possible to inadvertently walk off the aircraft.) The helicopter has a plan to automatically take off for a brief flight and then land when the entity named R 1 climbs aboard.
6. As the helicopter nears the ground, walk toward the rear of the aircraft (approach, but do not step on the ramp).
7. Near the ground, the ramp will open and you can walk off the aircraft to disembark.

1.2. Parachute Out of a Helicopter

Paratroopers can jump from aircraft and deploy parachutes. They can steer left and right and can slow descent. Parachutes are affected by wind.

When a paratrooper jumps, the view changes to a third-person view and the weapon is hidden. When the paratrooper lands, it returns to the view mode used prior to jumping and the weapon is available.

1. Start a new session and load the VR-Engage First Experience scenario.
2. In the Choose Role list, select Paratrooper 1 (Para1).
3. Click Engage. You are now seated in a helicopter. You can see other paratroopers seated across the aisle (Figure 1-18).

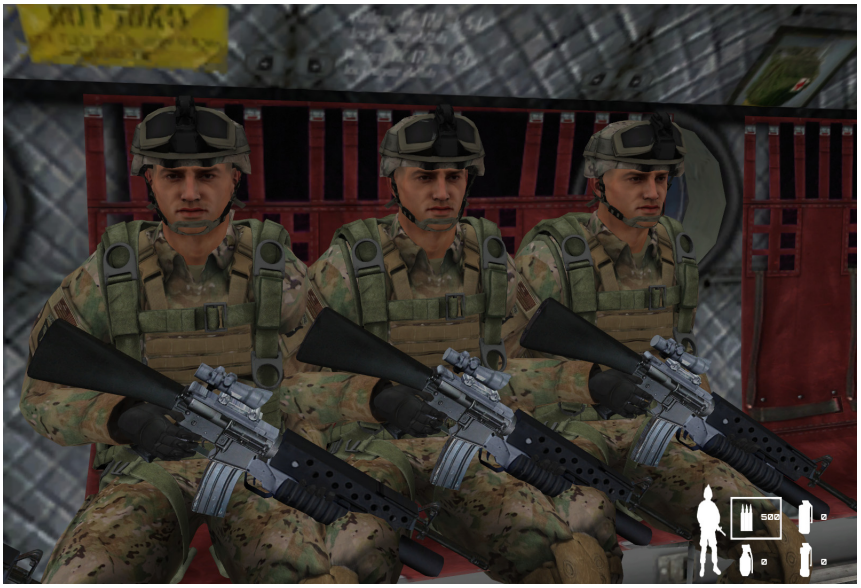


Figure 1-18. Seated in the helicopter

4. On the Action menu, select Stand Up.
5. Turn towards the rear of the helicopter (Figure 1-19).

Figure 1-19. Cargo door closed

6. On the Action menu, select Open Cargo Door. The cargo door opens (Figure 1-20).

Figure 1-20. Cargo door opened

7. Walk to the cargo door as far as you can. When you step off, the view changes to third person and you are falling towards the earth. The overlay shows the wind speed and direction and your altitude (Figure 1-21).

Figure 1-21. Free fall

8. After your character falls for a few hundred feet, press **`Spacebar`** or the left thumbstick on your Gamepad to deploy the parachute (Figure 1-22). (If you do not deploy the parachute, or wait too long to do so, the paratrooper will die on impact.)

Figure 1-22. Parachute deployed

9. As you descend towards the ground, press the **A** and **D** keys or buttons 5 and 6 on your Gamepad to move left or right. (For a diagram of Gamepad buttons, please see "Generic Gamepad Button Numbering," on page 2-24.)
10. Press **A** and **D** or buttons 5 and 6 together to slow the rate of descent.
11. Move the right thumbstick on the Gamepad, the Up and Down arrows on your keyboard, or the move the mouse forward and back to look up and down. Notice that other paratroopers have jumped out of the helicopter (Figure 1-23). They will try to follow you to your landing point.

Figure 1-23. Looking up

12. When you land, you return to first-person view. You do not need to gather the parachute.

1.3. Fly a Fighter Jet

So far we have looked at controlling humans and ground vehicles. Now let's try to fly an F/A-18. VR-Engage includes mappings for the Thrustmaster Warthog flight controller, the T.Flight Hotas X flight controller, and the Gamepad F310. Please see "Flight Controllers," on page 2-10 for mappings.

- Flying a jet is easier if you have two monitors, one for the instrument panel and one for the head-up display (HUD) view.
- The Gamepad provides limited flight support. It is recommended that you use a game controller with a joystick and throttle, such as the supported Thrustmaster controllers.
- To control aircraft, you must have an RTDynamics license installed. For details, please see *VR-Engage 1.1 Release Notes*.

1. If VR-Engage is not running, start it and load the VR-EngageFirst_Experience scenario as you did earlier in this first experience.
2. Choose **Settings** → **Tactical Graphics**. This scenario has tactical graphics that we want you to see. Tactical graphics are disabled by default, so you need to turn them on.
3. Use the mouse wheel to zoom out so that you can see more of the island and aircraft located south of it.

Take a look at the layout of entities in the scenario (Figure 1-24). You will see a blue force jet off the southern coast of Oahu. You will also see some large areas drawn on the map. The scenario has three vignettes for you to play:

- A dismounted infantryman is lasing a target in the Ala Moana area of Honolulu. As you fly towards the coast you will see the laser code and can bomb the target.
- When the jet flies into the yellow area, a SAM battery will fire surface-to-air missiles at you. Your job is to evade the missiles.
- When the jet flies into the green area, several Mig-29s will approach you. Your job is engage them in combat.

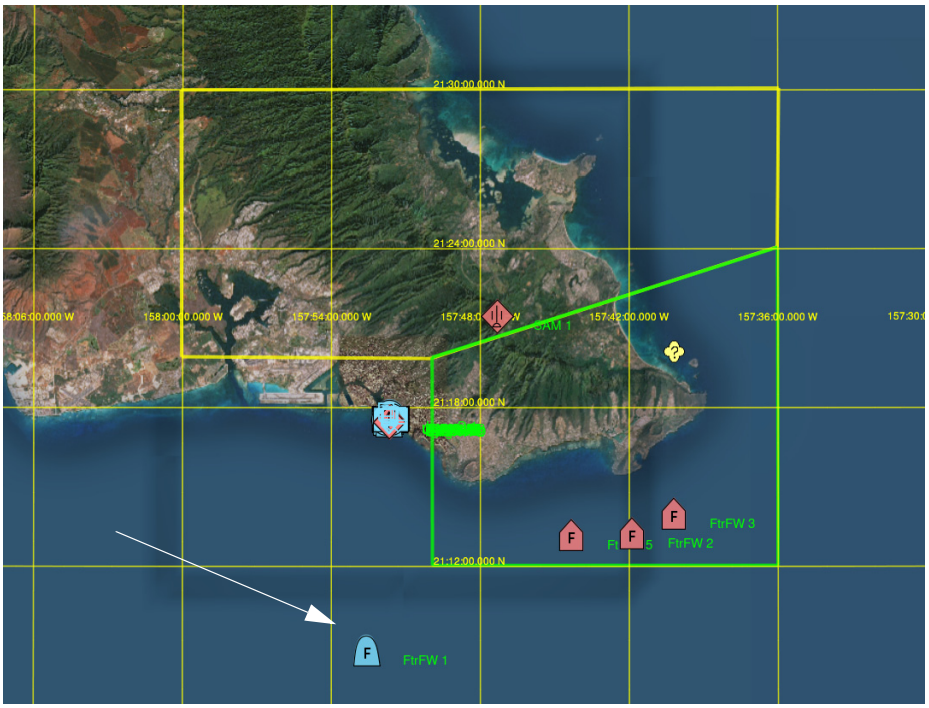


Figure 1-24. Jet experience areas

1.3.1. Take Control of the Jet

To take control of the jet:

1. In the Change Role Panel or on the map, select FtrFW 1.
2. If you are using two monitors, in the Display(s) list, select 2 Screens. If you are using one monitor, select 1 Screen Landscape or 1 Screen Portrait, depending on the orientation of your monitor.
3. Click Engage. The screen changes to show a HUD and an instrument panel. (If you just have one monitor and choose 2 Screen, the HUD will probably obscure the instrument panel. Press **`Alt`**+**`Tab`** to display the instrument panel.)

Figure 1-25. HUD and instrument panel (1 Screen Landscape display)

1.3.2. The Head-Up Display

The head up display provides an out-the-window view with an overlay showing speed, altitude (R = above ground level; A = above mean sea level), and heading (Figure 1-26).

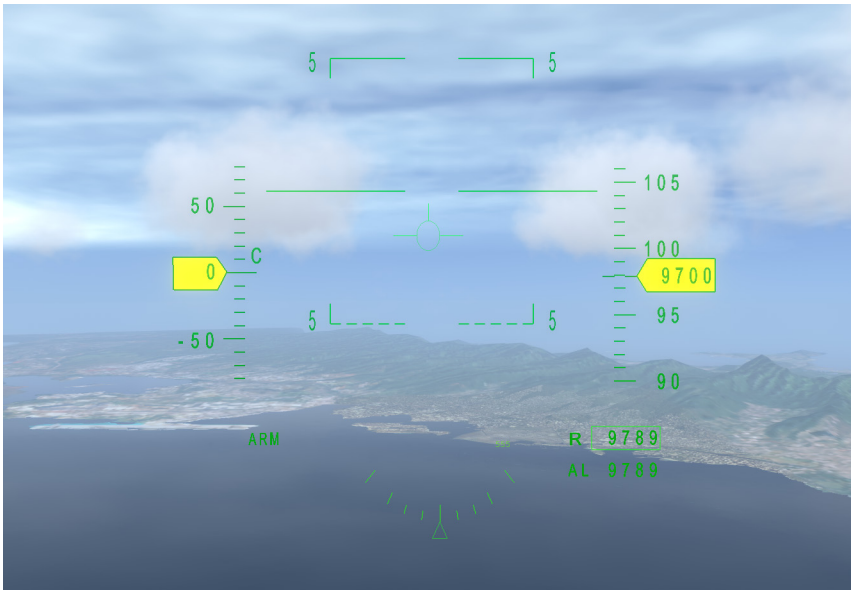


Figure 1-26. HUD (2 Screen display)

1.3.3. The Instrument Panel

The instrument panel (Figure 1-27) has six gauges and four multi-function displays (MFD).

In a two screen display, the instrument panel is an independent window. You can minimize and maximize it. Sometimes it gets hidden behind the HUD. If that happens, press **`Alt+Tab`** to bring it to the front.

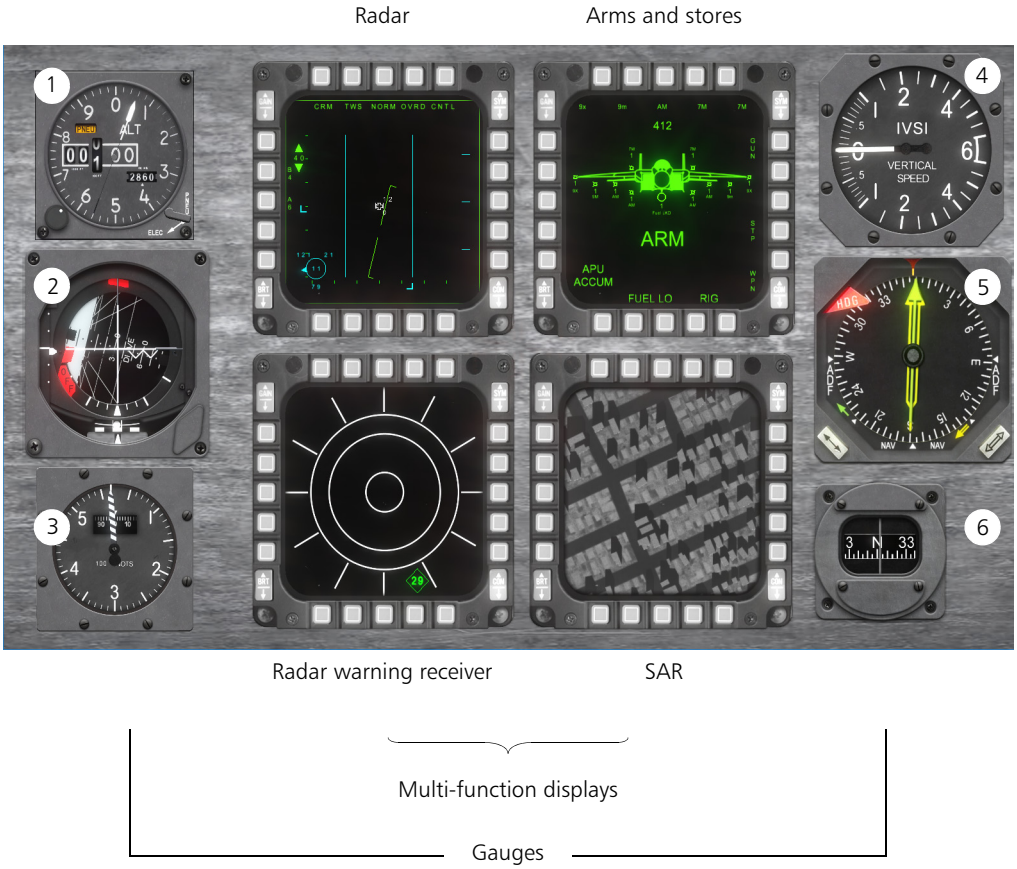


Figure 1-27. Instrument panel (2 Screen display)

The gauges are:

- 1 – Altimeter.
- 2 – Attitude Indicator (Artificial Horizon).
- 3 – Airspeed Indicator.
- 4 – Vertical Speed Indicator.
- 5 – Heading Indicator.
- 6 – Compass.

The MFDs are:

- Tactical Situation Display (Radar Indicator).
- Weapons/Stores Control Panel.
- Synthetic Aperture Radar (SAR) view.
- Radar Warning Receiver. Shows entities that are detecting you on their radar. The rings show the effective threat range.
- Visual Sensor Display. Displays the view from the gimbaled sensor or a plan view display of the scenario.

Changing the Multi-Function Display

Each MFD window can display any of the possible display types.

Figure 1-28. Multi-function display

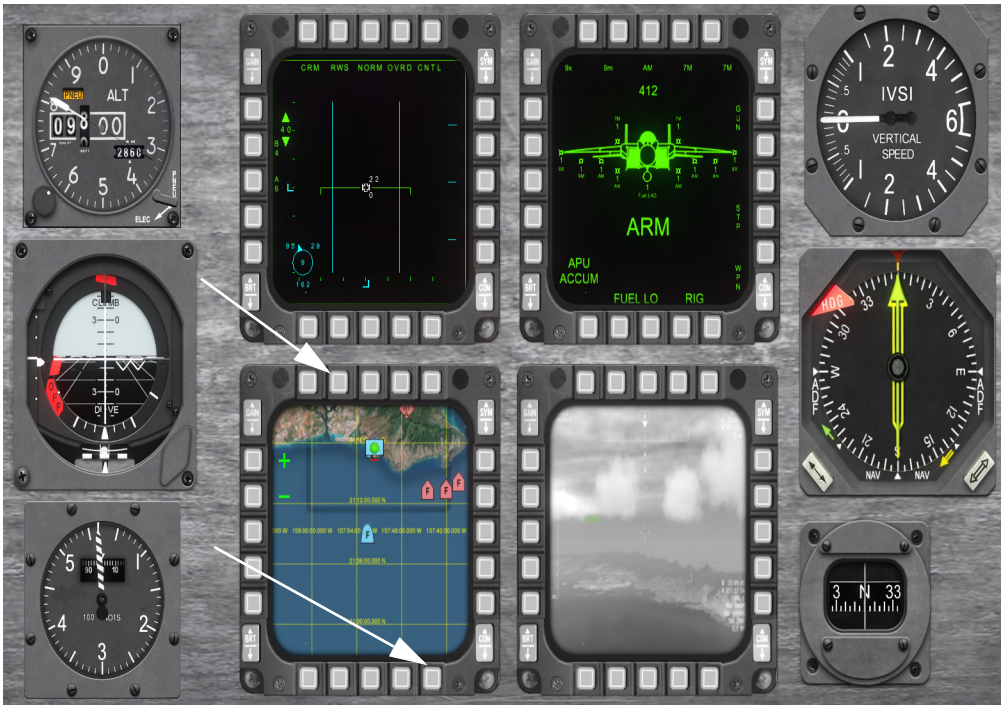
➤ To change the display, click one of the buttons along the bottom of the display. For Arms and Stores and Sensor view/Plan view, clicking one of the two leftmost buttons on the top of the MRD changes the display.

If the MFD display does not change when you click the buttons, the instrument panel might not have focus. Maximize it to ensure that it has focus.

1.3.4. Set Up The Multi-function Displays

Start by changing the MFDs to a more useful set.

1. Click the right-most button under the SAR display to change it to the sensor view display, as illustrated in Figure 1-29.
2. Click the second button from the left above the sensor view display to change it to plan view display. Now you have a ground-truth view of the entities in the scenario. This will help you understand where you are in relationship to the other entities.



Plan view Sensor view

Figure 1-29. Multifunction displays

1.3.5. Bomb a Target

Bombs get dropped wherever the target pod is looking. There are two ways to identify the target - you can specify MGRS coordinates, or you can lase the target and look at the location being lased. For lased targets, you can look at the target once, or you can continuously track what the laser is targeting. We will use this last type.

In this scenario an entity is lasing a target. If VR-Forces is controlling the lasing entity, the laser code is 555. If another player is controlling the lasing entity, the laser code is 1234.

To bomb the target:

1. After you take control of the jet, start flying.
2. Look at the Head Up display. You should see a laser code (Figure 1-30). (The text is light green, so it may be hard to see.)

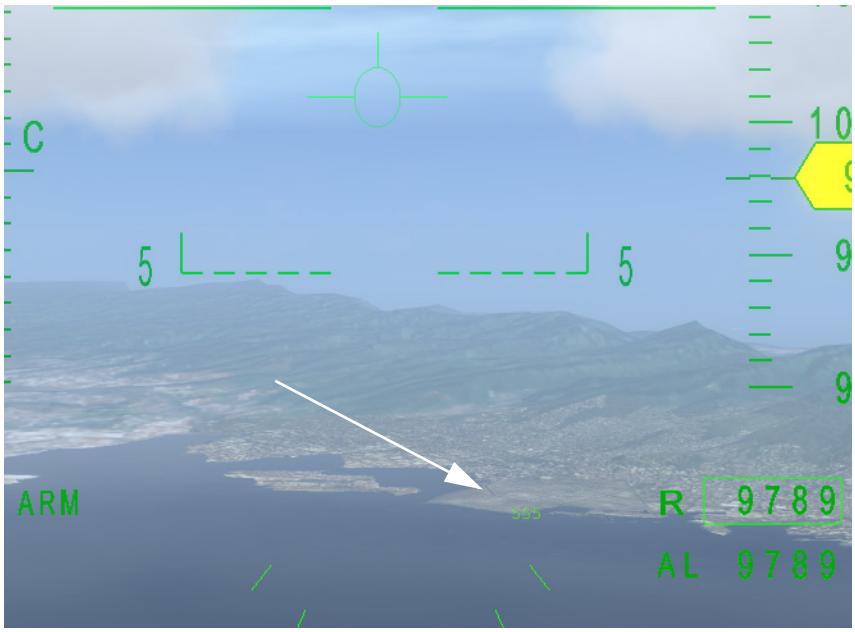


Figure 1-30. Laser code

3. Press **3**. The Continuous Laser Track dialog box opens.
4. Type 555. The sensor view focuses on the lased object (Figure 1-31).

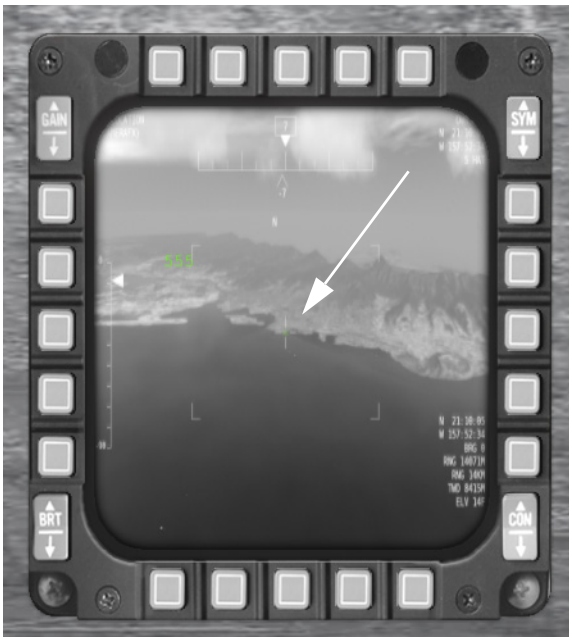


Figure 1-31. Sensor view

You can also enter the laser code by pressing **2**. When you enter the laser code by pressing **2**, the gimbal slews to look at the lase point. When you press **3**, the sensor stays fixed on the laser location.

5. Click OK.
6. Fly as close to the target as you want.
7. Press the trigger to drop the bomb.

1.3.6. Avoid Surface to Air Missiles

Continue flying North to enter the yellow area. When you enter the area, a SAM battery will detect you and fire SAM missiles. When your aircraft detects the missiles, it will sound a warning. You will need to have speakers or a headset to hear the warning.

Take evasive action. The jet will automatically fire chaff and flare to try to confuse the missile. If you watch on the plan view display, you will see the missile and the chaff and flare.

1.3.7. Air-to-Air Combat

If you survive the missile attack, fly the jet to the Southeast area of Oahu - the green area you saw when you chose your role. When you enter the area, three Red force fighters will approach you. You can view them on your plan view display and the Radar Indicator (Figure 1-32). You can also may be able to see them visually in the Head Up display.

A blue cursor along the bottom of the Radar Indicator shows when the radar is scanning. Yellow icons indicate detected targets.

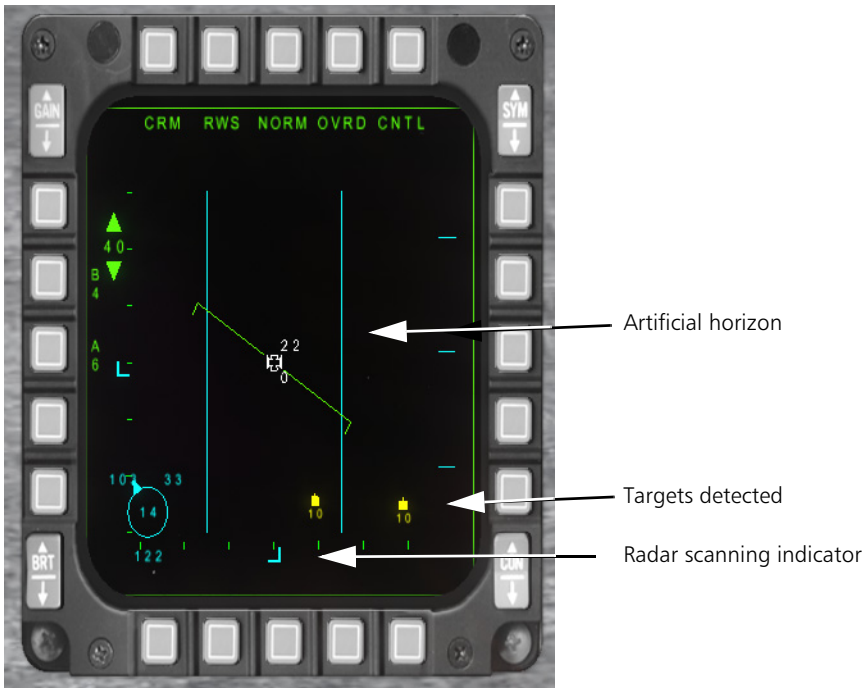


Figure 1-32. Radar Indicator

You may also see targets as green diamonds on the HUD (Figure 1-33).

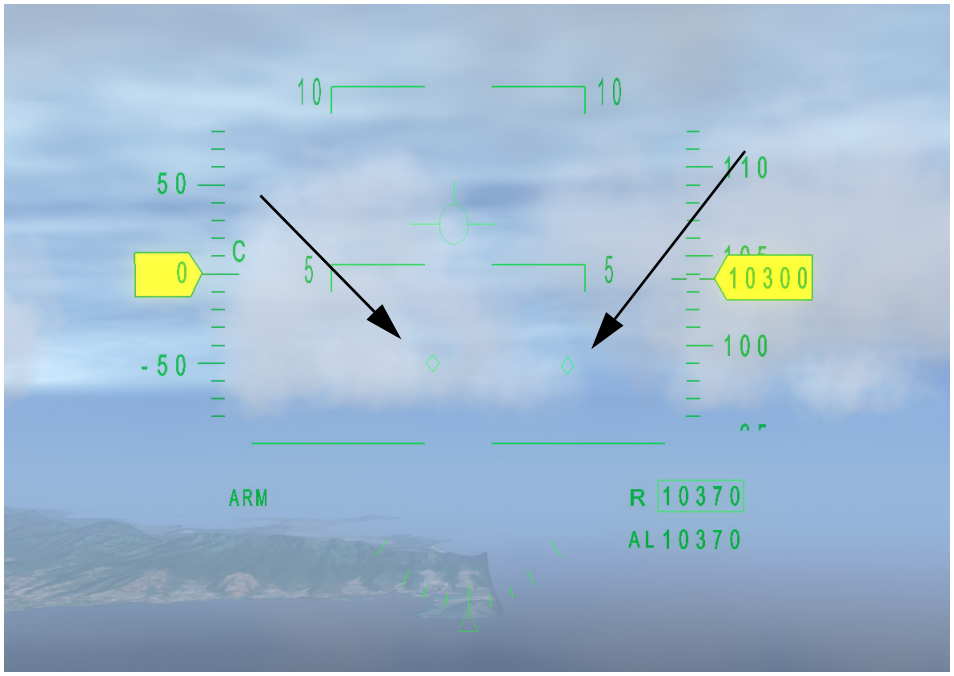


Figure 1-33. Targets in HUD

Select the target using the cursor select controls. Once you have locked on a target (Figure 1-34), you can fire a missile at it. The F/A-18 has two air-to-air missiles. You can tell you have locked on a target when the following things happen in the Radar Indicator:

- The target icon becomes an outline instead of being solid.
- The radar scanning indicator tracks the target instead of sweeping back and forth.
- The gates (the two vertical lines in the Radar Indicator) are no longer displayed.

Figure 1-34. Radar lock

1.4. Taking Control of VR-Forces Characters

Up to now, you have been running a scenario created in VR-Forces and provided with VR-Engage. You have been running it by hosting a VR-Forces session, which means that you have started a VR-Forces simulation engine, loaded the scenario in the simulation engine and connected to it through VR-Engage. VR-Engage users can also connect to and interact with VR-Forces sessions running on the network. In fact, this integration with VR-Forces is a significant aspect of the versatility and usefulness of VR-Engage.

When VR-Engage finds a VR-Forces session running on the network, it automatically connects to it. If that instance of VR-Forces has installed the VR-Engage add-ons, VR-Engage can take control of human characters being simulated by VR-Forces and vehicles that have been configured to be controlled by VR-Engage (the LAV, M1A2, and certain aircraft). Just as importantly, if VR-Engage gives up control of a character, that character resumes executing whatever task or plan it was executing before VR-Engage took control of it. Let's try this out.

To try out this part of the first experience, you must install VR-Forces on a computer on your network and you must install the VR-Engage add-ons for VR-Forces. For details, please see "Installing a Compatible VR-Forces and VR-Engage Add-ons," on page A-2. When you have the add-ons installed, you can start.

1. Start VR-Forces.
2. On the VR-Forces Launcher, select the DIS(7) connection.
3. Click Launch. VR-Forces starts up and the Scenario Startup dialog box opens.
4. Select Load Scenario From Disk.
5. Click OK.
6. In the Load Scenario dialog box, select VR-Engage_First_Experience.
7. Click Open.
8. Select *VR-Engage_First_Experience.scn*.
9. Click Open. The scenario loads.
10. Press **e** or use the scroll wheel on your mouse to zoom in on the warehouse area in Ala Moana. It should look just like the scenario did when you first tried out VR-Engage (Figure 1-4).
11. Choose Simulation Run Scenario. Notice that entity R 6 starts patrolling between Waypoint 6 and Waypoint 7.

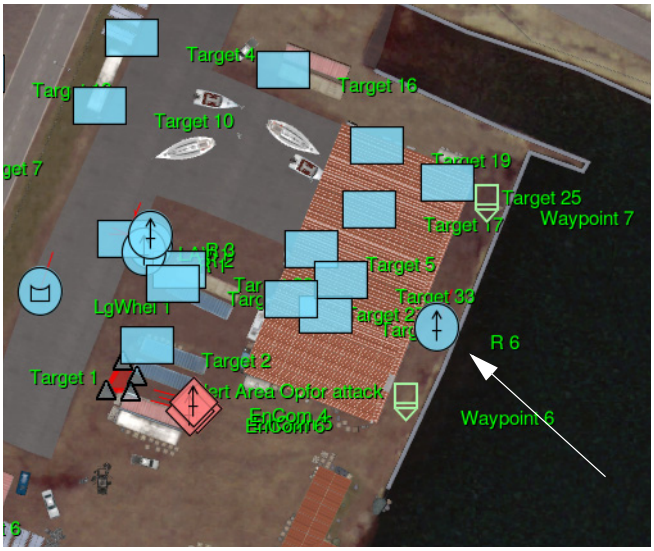


Figure 1-35. R 6 patrolling

12. Start VR-Engage. It automatically detects the VR-Forces session, loads that terrain, and presents the Choose Role panel. You can see R 6 patrolling in the Plan View display.
13. Select R 6.

14. Click Engage. You now control R 6 and he stops patrolling.
15. Walk around the end of the warehouse and out towards the open area with the boats and other entities. Prove to yourself that you now control R 6.
16. Press **`Esc`**. VR-Engage returns to the Choose Role panel and you give up control of R 6. Watch the screen as R 6 walks back to the area along the water and begins patrolling between Waypoint 6 and Waypoint 7 again.

2. Mouse, Keypad, and Controller Mappings

This chapter describes mouse and keyboard mappings and controller mappings for VR-Engage. You can use other controllers. To do so, you must create a configuration for each controller. For details, please see Section 6.9, "Configuring Joysticks and Keyboard Control," in *VR-Engage Users Guide*.

2.1. Mouse and Keyboard Mappings

Table 2-1 lists mouse and keyboard mappings for human players.

Table 2-1: Human player mouse and keyboard controls

Mouse Mappings	
Turn and move weapon	Mouse move
Fire	Left mouse button
Zoom in	Mouse wheel forward
Zoom out	Mouse wheel backward
Aim	Right mouse button
Keyboard Mappings	
Toggle full screen	CTRL + ENTER
Stop playing	ESC
Toggle Action menu	~
First-person mode	1
Third-person mode	3
Reset to starting position (the scenario continues to run)	F5

Table 2-1: Human player mouse and keyboard controls

Reset in current position (the scenario continues to run)	CTRL + F5
Move forward	W
Move backward	S
Strafe left	A
Strafe right	D
Yaw left	Left arrow
Yaw right	Right arrow
Toggle 1st and 3rd person	C. Aircraft only and only when using HOTAS Warthog controller.
Posture up	Q
Posture down	E
Sprint	SHIFT + W
Fire	SPACE
Aim	M
Talk on the radio	t
Pitch weapon up	Up arrow
Pitch weapon down	Down arrow
Toggle night vision goggles	N
Binoculars	B
Zoom in	=
Zoom out	-
Toggle flashlight	F

Table 2-1 lists keyboard controls for the Action menu.

Table 2-2: Action menu mouse and keyboard mappings

Mouse Mappings	
Select menu item	Mouse move
Keyboard Mappings	
Next menu item	Up arrow
Previous menu item	Down arrow
Select menu item	Right arrow or Enter
Return to previous menu	Left arrow

2.2. Logitech Gamepad Mappings for Human Control

Figure 2-1 illustrates Gamepad mappings for controlling humans.

The Mode button switches the functions of the D-pad and the left thumbstick. Since it is easy to inadvertently press it, if the D-pad and thumbstick are not working as expected, check the Mode button. It should be off (no green light).

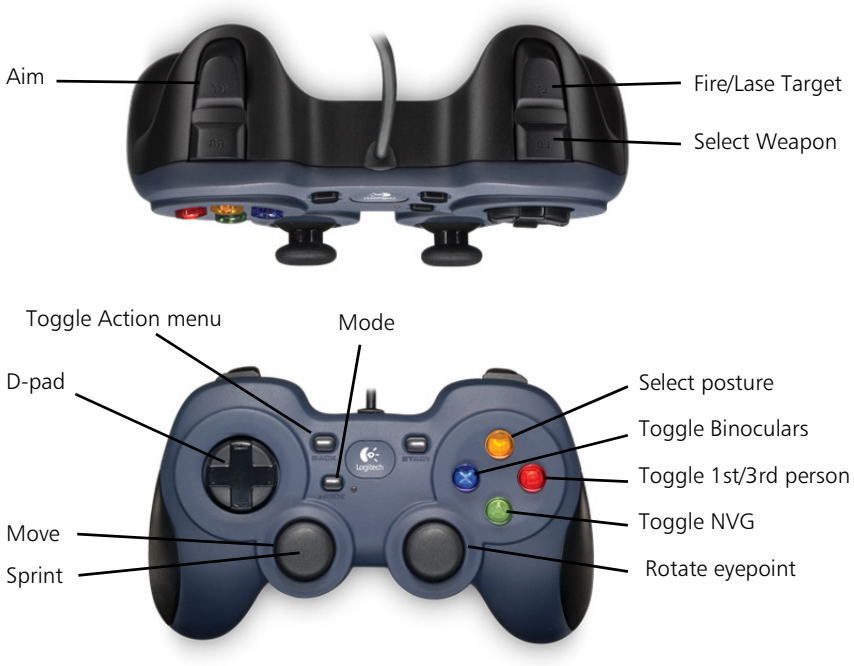


Figure 2-1. Human controls

2.3. Logitech Gamepad Mappings for Using the Action Menu

Figure 2-2 illustrates Gamepad mappings for the Action menu.

Figure 2-2. Gamepad menu controls

2.4. Logitech Gamepad Mappings for the LAV and M1A2

Gamepad mappings for controlling the LAV and M1A2 depend on the role you are playing. They are illustrated as follows:

- Figure 2-3 illustrates driver controls. These controls also apply to driving the M1A2 Abrams tank, except as noted.
- Figure 2-4 illustrates commander controls.
- Figure 2-5 illustrates gunner controls. These controls also apply to driving the M1A2 Abrams tank.

Figure 2-3. Driver controls for LAV and M1A2

Figure 2-4. LAV commander controls

Figure 2-5. Gunner controls for LAV and M1A2

2.5. G27 Racing Wheel Controller

Figure 2-6 illustrates the mappings of the G27 racing wheel for use with VR-Engage.

> If your racing wheel is not working as expected, make sure you are using the latest drivers.

Figure 2-6. G27 racing wheel controls

2.6. Flight Controllers

VR-Engage includes mappings for the Thrustmaster HOTAS Warthog flight (Joystick-HOTAS Warthog) controller, the T.Flight Hotas X (T.Flight Hotas X) flight controller, and the Gamepad F310 and F710 (Logitech Dual Action).

2.6.1. Thrustmaster HOTAS Warthog Mappings for Fixed-Wing Entities

Figure 2-7 and Figure 2-8 show the mappings for the Thrustmaster Warthog flight controller for fixed-wing entities.

Figure 2-7. Thrustmaster HOTAS Warthog joystick mappings - fixed-wing

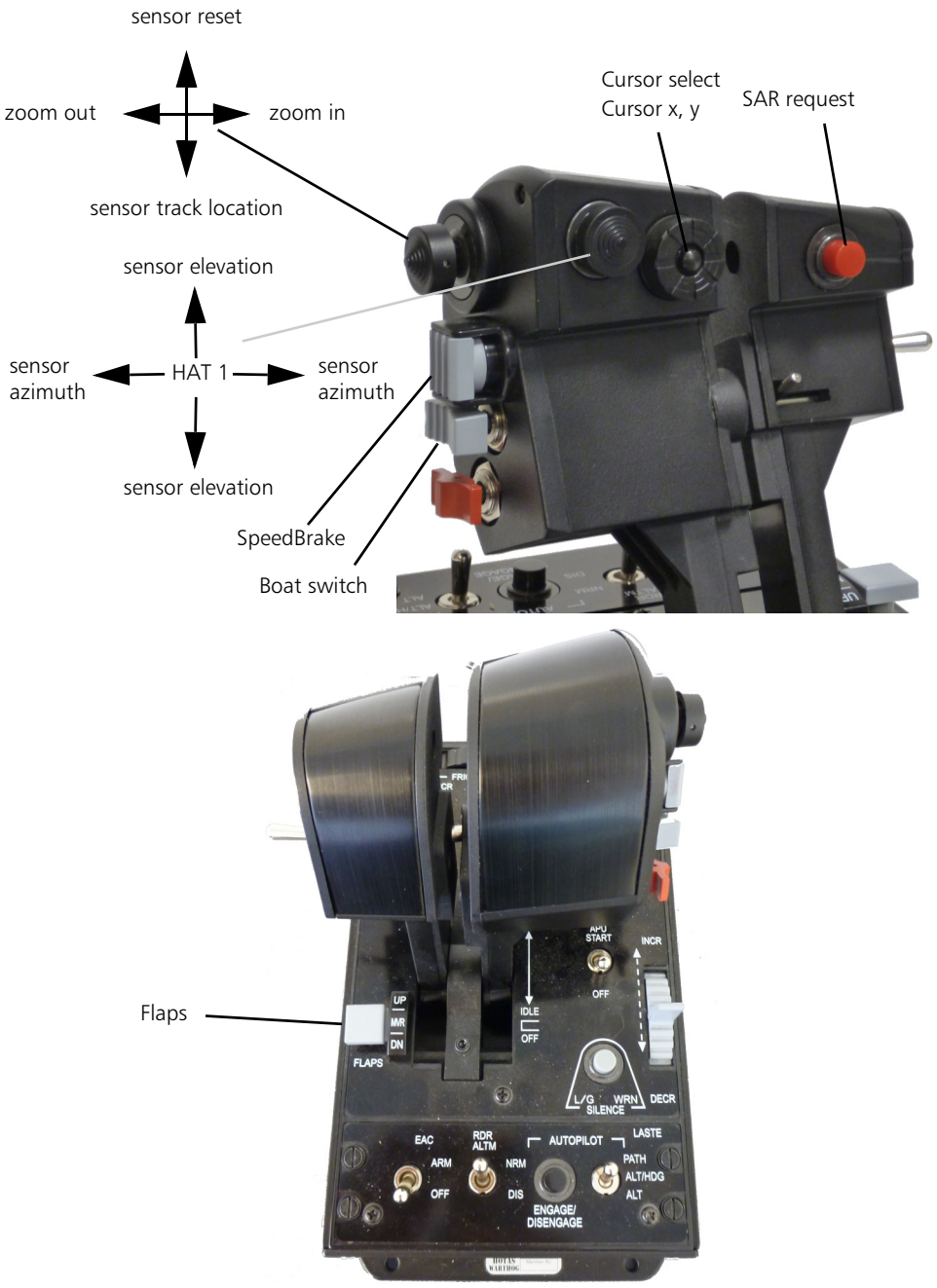


Figure 2-8. Thrustmaster HOTAS Warthog throttle mappings - fixed-wing

Table 2-3 lists the flight controls for the Thrustmaster HOTAS Warthog controller for fixed-wing entities.

Table 2-3: Thrustmaster HOTAS Warthog mappings - fixed-wing

Function	Key/Button
Extended Flight Controls	
Flap 1	Throttle Button 22 Down. Toggle states match joystick up, maneuver, down.
Flap 2	Throttle Button 23 Down. Toggle states match joystick up, maneuver, down.
Fire Missile	
fire	Button 1
FixedWingLib CGF Flight Controls	
air-brake	Boat Switch (Button 10) Down. This causes excess drag and the plane's speed drops quickly.
pitch	Joystick forward and back (Axis 2)
roll	Joystick left and right (Axis 1)
throttle	Throttle lever (Axis 3)
wheel-brake	SpeedBrake (Button 7) Down, button 8 Down. If you pull back and release, it recenters. If you push forward, it locks in place. Both directions activate full brakes.
Gimbaled Sensor	
sensor-azimuth	Throttle HAT 1 Right (Up), HAT 1 Left (Down)
sensor-elevation	Throttle HAT 1 Up (Up), HAT 1 Down (Down)
sensor-reset	Throttle Button 3 Down
sensor-track-location	Throttle Button 5 Down
sensor-zoom	Throttle Button 4 (Down), Button 6 (Up)
Radar Scope	
cursor-select	Button 1
cursor-x	Axis 1
cursor-y	Axis 2
Release Bomb	
release	Button 2
SAR	
request	Throttle Button 15

2.6.2. Thrustmaster HOTAS Warthog Mappings for Rotary-Wing Entities

Figure 2-9 and Figure 2-10 show the mappings for the Thrustmaster Warthog flight controller for rotary-wing entities.

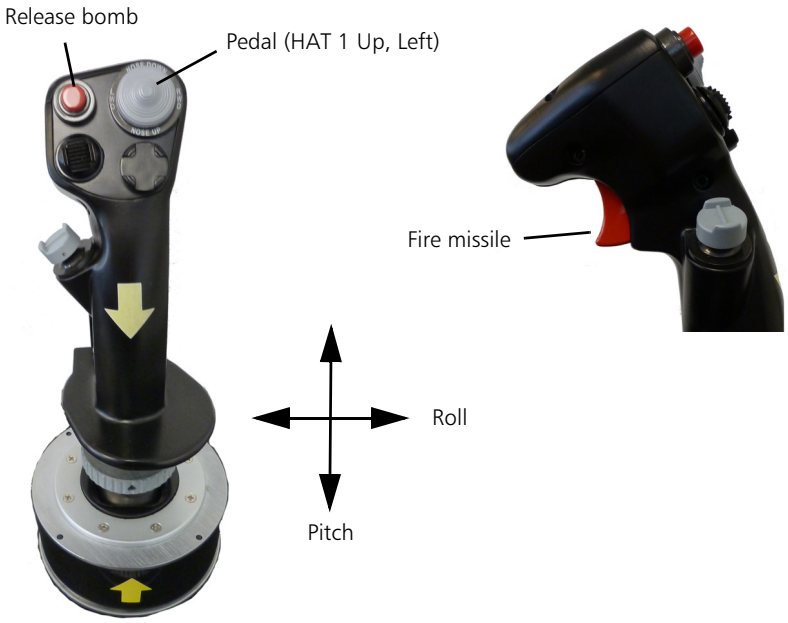


Figure 2-9. Thrustmaster HOTAS Warthog joystick mappings - rotary-wing

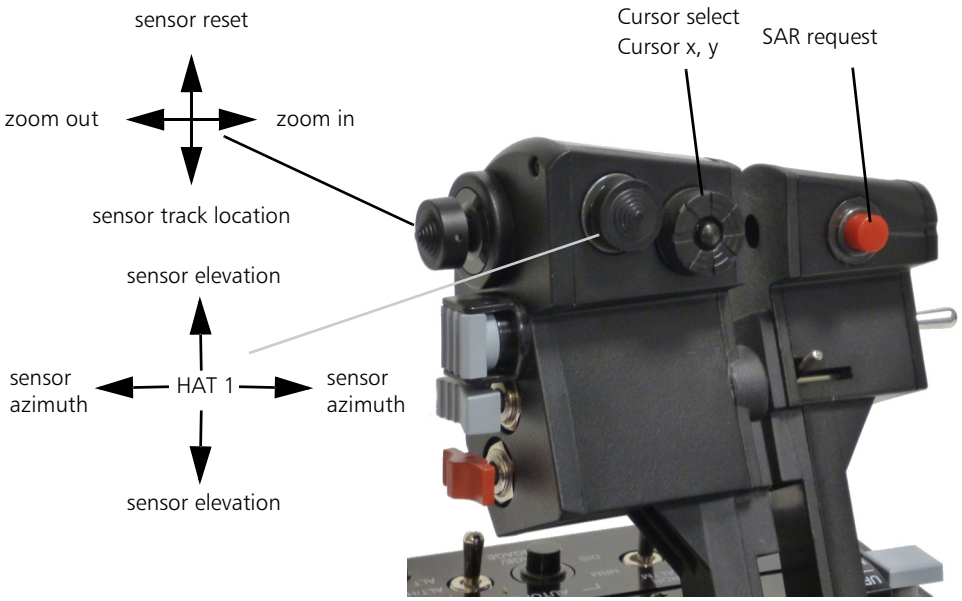


Figure 2-10. Thrustmaster HOTAS Warthog throttle mappings - rotary-wing

Table 2-4 lists the flight controls for the Thrustmaster HOTAS Warthog controller for rotary-wing entities.

Table 2-4: Thrustmaster HOTAS Warthog mappings - rotary-wing

Function	Key/Button
Fire Missile	
fire	Button 1 Down
Gimbaled Sensor	
sensor-azimuth	Throttle HAT 1 Right (Up), HAT 1 Left (Down)
sensor-elevation	Throttle HAT 1 Up (Up), HAT 1 Down (Down)
sensor-reset	Throttle Button 3 Down
sensor-track-location	Throttle Button 5 Down
sensor-zoom	Throttle Button 4 (Down), Button 6 (Up)
Radar Scope	
cursor-select	Button 1
cursor-x	Axis 1
cursor-y	Axis 2
Release Bomb	
release	Button 2
RotorLib CGF Rotary Wing Controls	
collective	Axis 3, <UP>, <DOWN>
pedal	HAT 1 Up, HAT 1 Left
pitch	Axis 2, W
roll	Axis 1, D (Up), A (Down)
wheel-brake	B
SAR	
request	Button 15

2.6.3. T.Flight Hotas X Mappings for Fixed-Wing Entities

Figure 2-11 shows the joystick controls for the T.Flight Hotas X flight controller for fixed-wing entities.

Figure 2-11. Fixed-wing T.Flight Hotas X joystick - fixed wing

Figure 2-12 shows the throttle controls for the T.Flight Hotas X flight controller for fixed-wing entities.

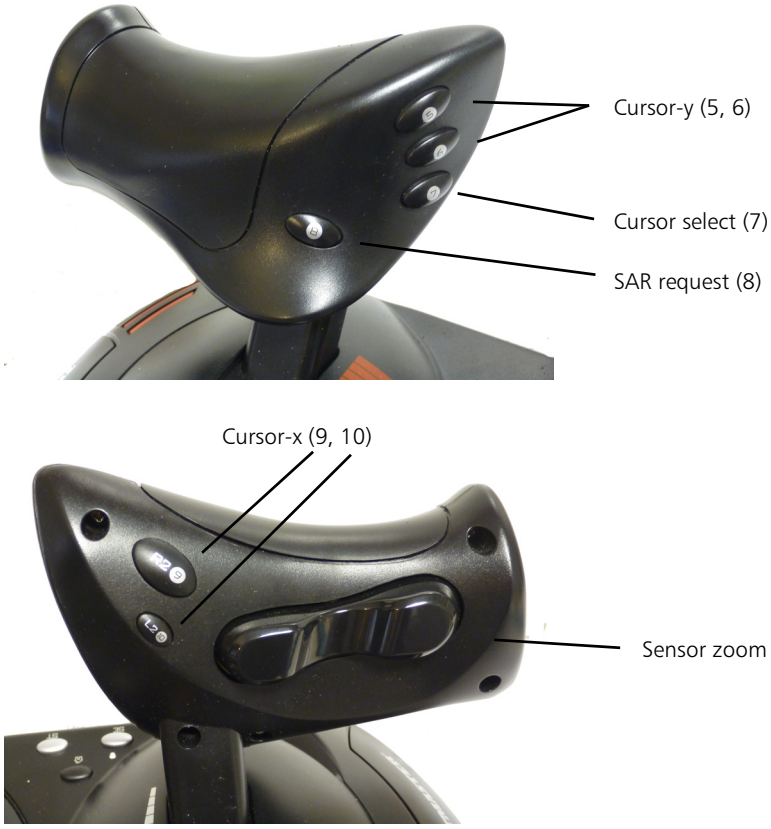


Figure 2-12. Fixed-wing T.Flight Hotas X throttle - fixed-wing

Table 2-5 lists the flight controls for the T.Flight Hotas X controller for fixed-wing entities.

Table 2-5: T.Flight Hotas X mappings - fixed-wing

Function	Key/Button
Fire Missile	
fire	Button 2 Down
FixedWingLib CGF Flight Controls	
pedal	Joystick twist left and right (Axis 4)
pitch	Joystick forward and back (Axis 2)
roll	Joystick left and right (Axis 1)
throttle	Throttle forward and back (Axis 3)
Gimbaled Sensor	

Table 2-5: T.Flight Hotas X mappings - fixed-wing

Function	Key/Button
sensor-azimuth	HAT 1 Right, Left
sensor-elevation	HAT 1 Up, Down
sensor-reset	R
sensor-track-location	L
sensor-zoom	Rocker buttons on back of throttle (Axis 5)
Menu	
down	HAT 1 Down, <DOWN>
left	HAT 1 Left, <LEFT>
right	HAT 1 Right, <RIGHT>
up	HAT 1 Up, <UP>
Radar Scope	
cursor-select	Button 7 Down Toggle
cursor-x	Button 9 (Up), Button 10 (Down), Axis 5
cursor-y	Button 5 (Up), Button 6 (Down)
Release Bomb	
release	Button 1 Down
SAR	
request	S, Button 8 Down

2.6.4. T.Flight Hotas X Mappings for Rotary-Wing Entities

Figure 2-13 shows the joystick controls for the T.Flight Hotas X flight controller for rotary-wing entities.

Figure 2-13. Fixed-wing T.Flight Hotas X joystick - rotary-wing

Figure 2-14 shows the throttle controls for the T.Flight Hotas X flight controller for rotary-wing entities.

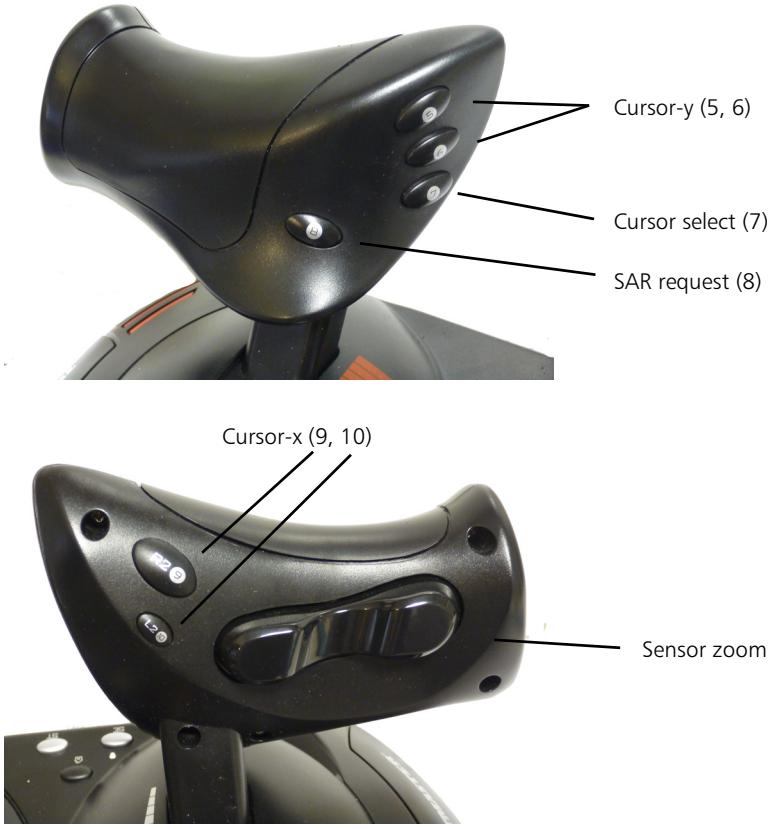


Figure 2-14. Fixed-wing T.Flight Hotas X throttle - rotary-wing

Table 2-6 lists the flight controls for the T.Flight Hotas X controller for rotary-wing entities.

Table 2-6: T.Flight Hotas X mappings - rotary-wing

Function	Key/Button
Fire Missile	
fire	Button 2 Down
Gimbaled Sensor	
sensor-azimuth	HAT 1 Right, Left
sensor-elevation	HAT 1 Up, Down
sensor-reset	R
sensor-track-location	L
sensor-zoom	Rocker buttons on back of throttle (Axis 5)

Table 2-6: T.Flight Hotas X mappings - rotary-wing

Function	Key/Button
Menu	
down	HAT 1 Down, <DOWN>
left	HAT 1 Left, <LEFT>
right	HAT 1 Right, <RIGHT>
up	HAT 1 Up, <UP>
Radar Scope	
cursor-select	Button 7
cursor-x	Button 9 (Up), Button 10 (Down), Axis 5
cursor-y	Button 5 (Up), Button 6 (Down)
Release Bomb	
release	Button 1
RotorLib CGF Rotary Wing Controls	
collective	Throttle forward and back (Axis 3)
pedal	Joystick twist left and right (Axis 4)
pitch	Joystick forward and back (Axis 2)
roll	Joystick left and right (Axis 1)
SAR	
request	S, Button 8

2.6.5. Gamepad Flight Control Mappings for Fixed-Wing Entities

Figure 2-15 illustrates the fixed-wing flight controls for Gamepads.

Figure 2-15. Fixed-wing flight controls

Table 2-7 lists the flight controls for Gamepads for fixed-wing entities.

Table 2-7: Gamepad flight control mappings - fixed-wing

Function	Key/Button
Fire Missile	
fire missile	Button 8 Down Toggle
FixedWingLib CGF Flight Controls	
pedal	Axis 1 (Left thumbstick, left/right)
pitch	Axis 4 (Right thumbstick, forward/back)
roll	Axis 3 (Right thumbstick, left/right)
throttle	Axis 2 (Left thumbstick, forward/back)
Gimbaled Sensor	
sensor-azimuth	HAT 1 Left (Up), Right (Down)
sensor-elevation	HAT 1 Up (Up), Down (Down)

Table 2-7: Gamepad flight control mappings - fixed-wing

Function	Key/Button
sensor-reset	R
sensor-track-location	L
sensor-zoom	Button 5 (Up), Button 6 (Down)
SAR	
request	S

2.6.6. Gamepad Flight Control Mappings for Rotary-Wing Entities

Figure 2-16 shows the buttons for the F310 Gamepad for rotary-wing control.

Figure 2-16. Gamepad rotary-wing flight controls

Table 2-8 lists the flight controls for Gamepads. for rotary-wing entities

Table 2-8: Gamepad flight control mappings - rotary-wing

Function	Key/Button
Fire Missile	
fire missile	Button 8 Down Toggle
Gimbaled Sensor	

Table 2-8: Gamepad flight control mappings - rotary-wing

Function	Key/Button
sensor-azimuth	HAT 1 Left (Up), Right (Down)
sensor-elevation	HAT 1 Up (Up), Down (Down)
sensor-reset	R
sensor-track-location	L
sensor-zoom	Button 5 (Up), Button 6 (Down)
RotorLib CGF Rotary Wing Controls	
collective	Axis 2
pedal	Axis 1
pitch	Axis 4
roll	Axis 3
SAR	
request	S

2.7. Generic Gamepad Button Numbering

Game controllers are mapped in the Joystick Configuration page of the Application Settings dialog box. (For details, please see "Configuring Joysticks and Keyboard Control," on page 6-23.) The mapping are identified by button and axis numbers. Figure 2-17 identifies the button and axis numbering scheme.

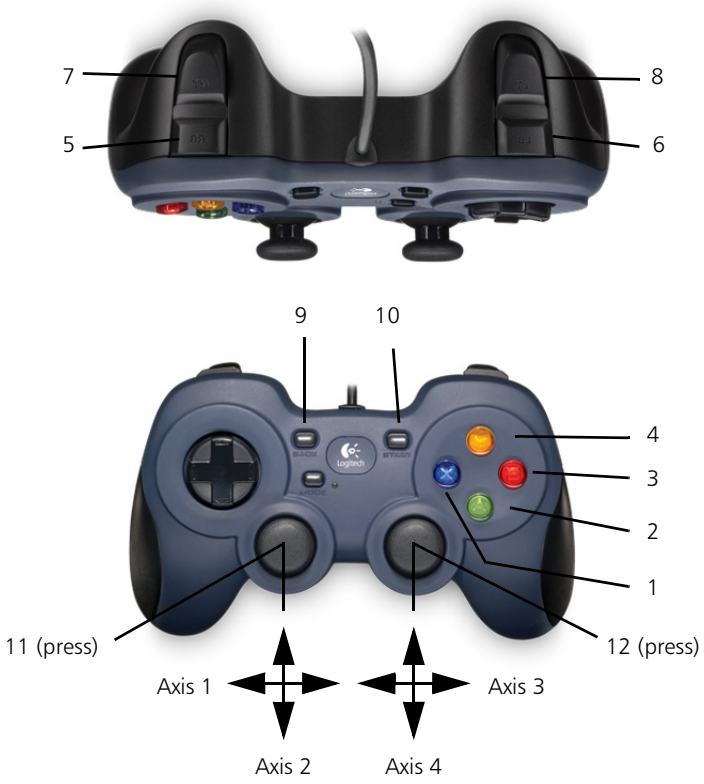


Figure 2-17. Button and axis numbering

A. Installation and Licensing

Your MAK salesperson has given you links to the VR-Engage installers, and may have given you links to other installers. Download the files. Before you install the applications, note the following possible issues:

- When you install VR-Engage, there may be a delay of up to several minutes from the time you try to run the setup program to the time that an installation dialog box is displayed. If you experience this problem, turning off User Access Control can reduce or eliminate this delay.
- These instructions assume you are familiar with installing Windows applications that use a wizard-style installer. They also assume that you have an unzipping application and know how to use it.

A.1. Installing VR-Engage

VR-Engage has an application installer and a data package. The base data package has four files. You must install all four files or VR-Engage will not run properly. The default installation process installs these files automatically.

VR-Engage also has a supplementary data package that has additional terrains. The installation package includes a set of plug-ins to VR-Forces and VR-Vantage. If you are installing a VR-Forces build that is compatible with VR-Engage and want to take advantage of VR-Engage/VR-Forces integration, you must install the plug-in. The VR-Vantage plug-in adds models.

To install VR-Engage:

1. Run the application installer. It opens an installation wizard.
2. When the installation wizard asks how you want to install the application data package, select `Install the recommended data package automatically`. The installer will install VR-Engage and automatically install the data package.
3. Optionally, install VR-Forces and VR-Engage plug-ins, as described in "Installing a Compatible VR-Forces and VR-Engage Add-ons," on page A-2.

A.1.1. Installing a Compatible VR-Forces and VR-Engage Add-ons

If you install a version of VR-Forces that is compatible with VR-Engage and you install the VR-Engage plug-ins, you can control VR-Forces simulation objects from VR-Engage.

To install VR-Forces:

1. Run the VR-Forces application installer. When the installation wizard asks how you want to install the data package, select the option to install the data package automatically.
2. In the VR-Engage root directory, run *VR-ForcesVR-EngageAdd-ons.exe*. If the add-on installer cannot find the VR-Forces directory, it displays a message. (If you installed VR-Forces on a different computer than the one on which you installed VR-Engage, copy *VR-ForcesVR-EngageAdd-ons.exe* to the computer that has VR-Forces.
3. Click OK. You are prompted to specify the VR-Forces directory to install into.
4. Specify the VR-Forces directory.
5. Click OK. Since the directory already exists, you are prompted to confirm the installation.
6. Click Yes.
7. Complete the installation wizard.

A.2. Setting Up the License Manager

To use a MAK product, you must install the MAK License Manager and get a license for your product. Before you can use a MAK product, you must obtain a valid license file and specify the license server.

➤ To install the MAK License Manager, run the installer.

The general procedure for configuring license management is as follows:

1. Identify the name and ID of the license server and request a license file.
2. Put the license file in the *MAK/MAKLicenseManager* directory on the license server.
3. Run the license server.
4. Specify the license server location.

A.2.1. Identify the Host ID and License Server Name

For simplicity, use the computer on which you installed VR-Engage as the license server. To find out the host ID and license server name:

1. On the Start menu, choose **Programs** → **MAK Technologies** → **MAK License Manager** → **MAK License Manager**. The MAK License Manager utility opens (Figure A-1).

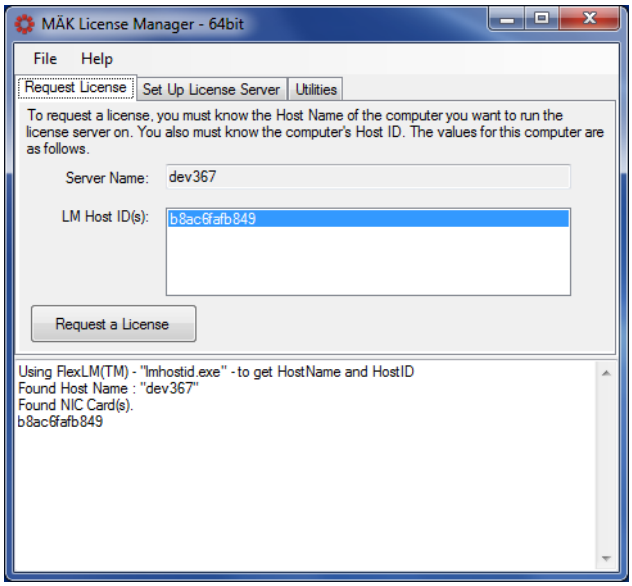


Figure A-1. License Manager

2. Select the Request License tab. It displays the server name and the IDs for your network cards.
3. If you have more than one network card, select the one that you want to use as Host ID.

4. Send the host ID and hostname to your MAK salesperson. MAK will e-mail you a license file.

A.2.2. Put the License File in the *MAKLicenseManager* Directory

When you receive your license file, put it in the *MAKLicenseManager* directory on the license server. The file should have the extension *.lic*. If it does not, please contact keys@mak.com to clarify why it did not follow this convention.

A.2.3. Run the License Server

➤ To start the license server daemon, on the server machine only, execute `runLm` from the *MAKLicenseManager* directory.

Shutting Down the License Server

➤ To force all applications to check in their licenses and shut down the license server daemon, run `lmdown`.

A.2.4. Specify the License Server

The first time you run a MAK application on a computer, the License Setup dialog box opens (Figure A-2). It prompts you to enter the hostname of the license server and optionally, a port number.

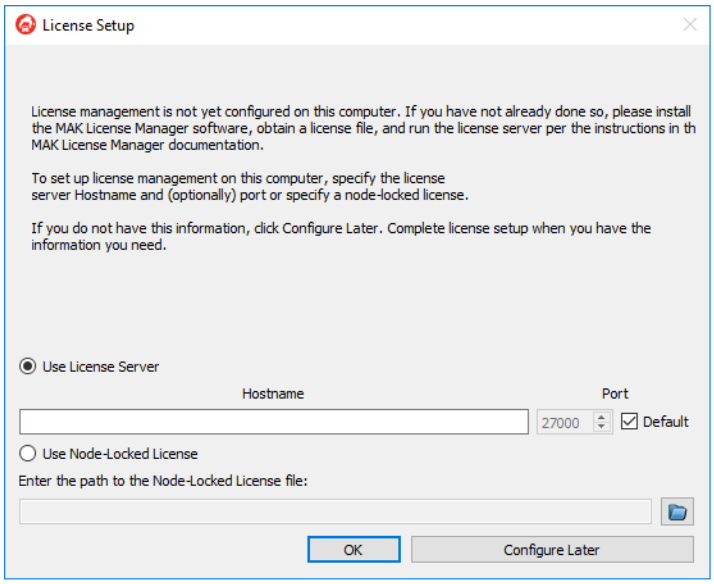


Figure A-2. License Setup dialog box

1. Type the hostname in the Hostname box.
2. Click Add License Server. The application will start.

A.3. Third Party Licenses

You may need to install licenses for the Vortex Libraries (ground vehicle movement) or RTDynamics libraries (fixed-wing and rotary-wing movement). Please see *VR-Engage 1.1 Release Notes* for details.