



ARDI Virtual Environment User Guide

Optrix Pty. Ltd.

ABSTRACT

This document describes how to use the ARDI Virtual Environment (ARDI-VE) client.

Overview

What Does This Document Cover?

This document is designed to allow new users to become familiar with how to use the ARDI Virtual Environment (ARDI-VE) client.

Assumed Knowledge

Basic desktop PC usage.

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Introduction

What is the Virtual Environment?

The ARDI Virtual Environment is a three-dimensional representation of your plant and process. Rather than showing your information on a traditional 2D display such as those found on HMIs and SCADA systems, ARDI creates an environment you can fly through and examine from all angles.

What is ARDI?

ARDI is the Asset Relationship and Data Integrator – a software package designed to consolidate all of the important information about your plant assets (and the plant itself) into a single, consistent location.

As well as a powerful web interface, ARDI has a variety of *clients* (of which ARDI-VE is one) that allow you to see your assets in new and easy ways.

Why would I use this?

ARDI-VE gives you a new perspective on your assets that allows you to understand them not just as a **process**, but also as a connected, complex **site**.

It is an extremely flexible way of seeing your process data, comparing it effortlessly and is particularly powerful when examining your history.

Starting ARDI-VE

Installing the App

ARDI-VE does not require a complete installer as such – you can simply copy the files to a suitable location on your device. This allows users to run the application across a network share or on access-limited devices.

However, for convenience we have a Windows installer available, available for download from the Optrix website.

Launching the App

Simply launch ARDI-VE by double-clicking the icon or selecting it from the *Start* menu. Note that you can find it quickly by typing 'ARDI' in the *Search Windows* box in Windows 10, or in the start menu in earlier versions of Windows.

Connecting to ARDI

The ARDI Server

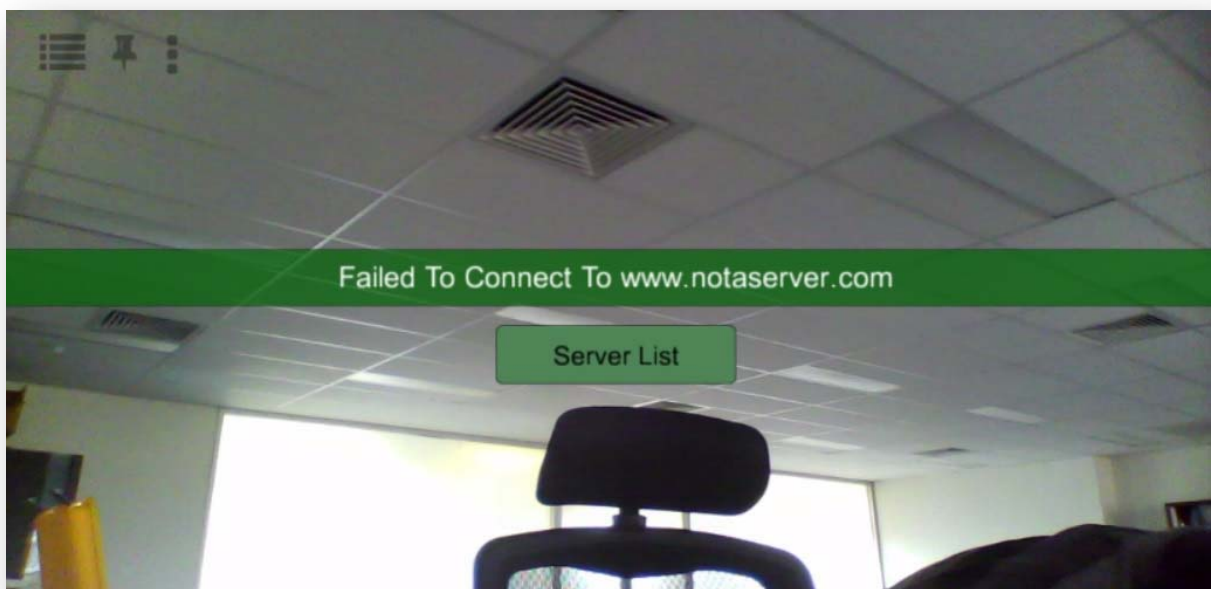
Your system administrators or management should inform you of the correct address for your ARDI server. This will usually be a web URL, such as **ardi.companyname.com**

The ARDI server is the repository of all of the information about your assets. Not only can you access it via the ARDI-VE client, but going to that same address in a web-browser will also allow you to access asset details.

If this is the first time you've started ARDI-VE, you'll be asked to pick an *ARDI Server* to connect to. If you're returning to ARDI, you'll be automatically re-connected to the server you used last.

Connection Errors

If you've used ARDI-VE previously and the app is unable to connect to your previous ARDI server, you'll see an error message similar to the one below, with a button to go to the Server List and either choose or add a new server.



The Server List

The server list appears the first time you start ARDI and can also be accessed whenever you press the ARDI icon found in the lower-right corner of the screen.



ITEM	NAME	ACTION
1	Server Button	Click to connect to an existing ARDI server
2	Delete Button	Removes an existing server from the list
3	Add Server	Takes you to the Add Server screen to add a new server
4	Close	Closes the screen and goes back to scanning

The server list – as its name implies - is a list of all of the servers you’ve successfully connected to in the past.

In many cases, you’ll only ever need the one server. However, contractors in particular may need the ability to switch between recently used servers when they move between companies and sites.

Connecting to an Existing Server

If you already have a server in the list, you can connect to it simply by clicking on the button with its name.

The Server List will close and you’ll then be able to start scanning.

Removing a Server

If you aren’t going to need a server anymore, you can press the ‘X’ button to the right of the server name. This will permanently remove that particular server from your list.

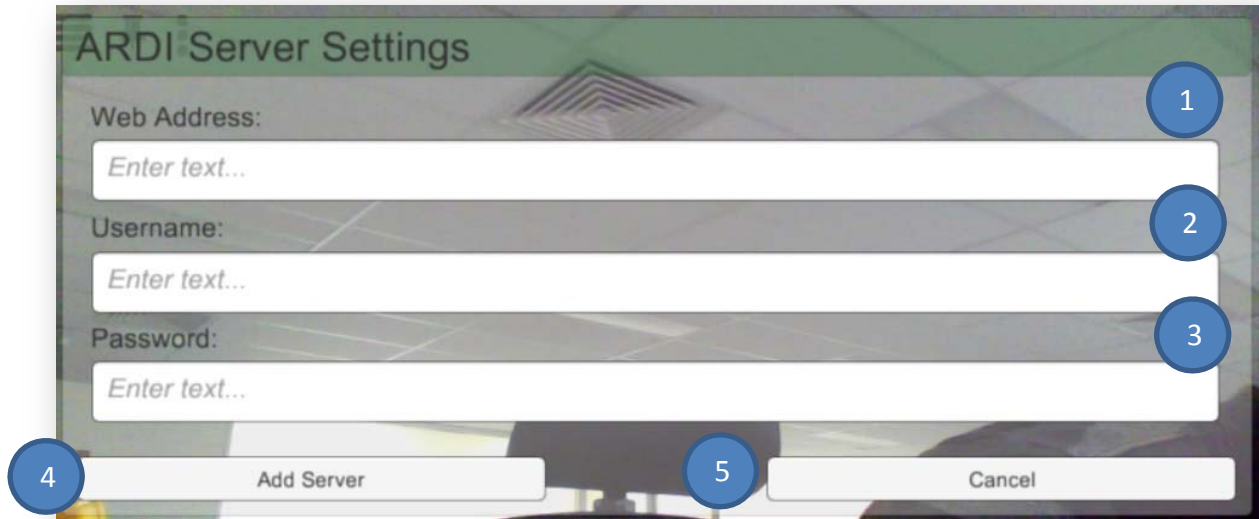
You can re-add it later using the ‘Add Server’ button, if required.

Adding a New Server

To add a new ARDI server to the list, press the 'Add Server' button found at the bottom of your screen in the Server List.

This will take you to the Add Server page, as described below.

Adding Servers



ITEM	NAME	ACTION
1	Web Address	The URL of your ARDI server
2	Username	Your ARDI username. <i>This is usually left blank.</i>
3	Password	Your ARDI password. <i>This is usually left blank.</i>
4	Add Server	Connects to the server you entered in Web Address.
5	Cancel	Stops adding a new server and returns you to the Server List

The image above shows the Server Settings screen, where you can connect to new ARDI servers.

The most important item to add is the web address of your ARDI server. This should be given to you by management or your IT department.

Simply touch the 'Web Address' field and your keyboard will appear (this sometime takes a few moments to come up).

Most ARDI servers are part of your *intranet* (ie. are internal to your organisation and not accessible via the Internet). As such, they will actually work in what is called 'Guest Mode', where the information is available to anyone.

Because of this, the **username** and **password** fields should normally be left blank unless you're specifically told otherwise.

This means that for most users, all that is needed is to enter the web address of the ARDI server, then press the 'Add Server' button.

The VE Layout

3

1

2

Above you can see the basic interface for ARDI-VE when looking at an empty location.

At marker **1**, you'll see your 3D environment. Here you'll find all of your assets. You can take control of the camera and sweep through and into your environment. See the following section, *Getting Around*, on page 17.

At marker **2**, you have your **sidebar**. This is used to change what you are looking at, search for assets and otherwise control your experience. What the sidebar buttons are and what they do is covered in *Viewing Properties*

Being able to see your assets in their locations is useful, but where ARDI is truly powerful is when you look at your *properties*.

Some properties may already be visible to you – some properties drive animations, such as mechanisms spinning, mobile equipment moving, the levels in open tanks moving up and down etc.

However, the bulk of the measurements made in a system aren't visible – they live under the surface of your asset. Pressure, temperature, vibration, flow – most of these can't be seen in the real world.

ARDI doesn't have that limitation, so you can use it to see straight through into the heart of your asset and see the measurements across the plant.

Selecting a Property To View

The first step is to select which property you'd like to see.

To do that, press the 'Display Options' button on the sidebar (the picture of an eye located in the top-right side of the screen).

A drawer will pop out of the right, giving you a list of buttons that allow you to choose from the various properties present in your scene.

Some properties are simple and your view will immediately change.

In some cases though, there can be *several* different types of a property. For example, there may be **Air Pressure** and **Hydraulic Pressure**.

In this case, a popup will appear that allows you to choose which *type* of that property you'd like to view.

Click on the 'eye' in the top-left corner to close the drawer, if you change your mind.

Your New Display Mode

Now that you've picked a **Display Mode**, the screen will flash and your view of the environment will change.

Everything that contains the value you've chosen will light up, colouring to show the value within the asset.

When looking at properties, some items in the environment may fade out – these include...

- Assets that don't include the property you are looking for,
- Parts of the environment, such as walls and floors
- Decorative items that aren't assets themselves
- The background, which will turn to black

Note that this happens for most properties, but may not apply to *all* properties – your ARDI administrator can choose not to fade elements out in some cases.

Below, you can see that when we turned the 'AC Current' display mode on, we can now all of the agitator, not just the part that sticks up from the tank. You can also see right through the tank to the pump that is on the other side of it.

Analogue / Continuous Values

To help you interpret the colours, you can find a scale shown at the bottom of the screen.

The most obvious thing you'll see will be the colour scale itself. You can use the colour scale and the range to quickly interpret what your colours actually represent.

Automatic Adjustment

Some of the time, your range is **fixed**. This means that the range never changes, no matter where you move or look.

In other cases, your scale will automatically adjust to fit the minimum and maximum values currently on-screen.

This allows you to compare the items on-screen, even when the differences between them are small compared to the other assets in the environment.

We can show this in a quick example. Let's take an environment where we have three assets that contain temperature sensors – asset A, B and C and the brown dotted line represents the field of view of our camera.

When we are zoomed out so that all three items are in view, asset 'C' (at 200 Deg C) is red, while the others are all so close to each-other that we can't tell them apart.

When we zoom **in** so that we can only see assets A and B, our scale adjusts so that we now see the difference between the two sensors clearly.

It works very much like blocking out a source of bright light – if you look into the sun, everything else appears very dark. However if you look away and give your eyes a few moments to adjust, everything that was previously dark is now light.

Just like when your eyes adjust to new light levels, adjustment from a range of 0-200 degrees to 0-10 degrees doesn't happen instantly, but instead occurs over a few seconds.

Manual Adjustment

If your range isn't fixed, you can manually adjust your colour scale using the two sliding arrows on each side (marked as the *scale low-end adjustment* and *scale high-end adjustment* on the earlier diagram).

This allows you to narrow your scale to look at smaller ranges. It's particularly effective when you want to look for a particular event, such as a switch trip-point or where a process when wrong – you can see small changes even amongst radically higher or lower temperatures.

You adjust the **lower** end of the scale by clicking on the scale with the *left* mouse button. You adjust the **higher** end of the scale by clicking on it with the *right* mouse button.

Control Buttons

There are three control buttons next to the range.

RESET automatically adjusts your view range, if you've changed it manually.

LOCK can be toggled to one of three states. A white lock indicates that you are currently *unlocked*, meaning that the range may adjust automatically at any time.

YELLOW LOCK indicates that the range is now fixed – you can turn and look at other assets without the range automatically adjusting.

GREEN LOCK locks the range to the scale of the property (ie. 0-100%) rather than what is visible on-screen at the time.

CLIP makes the items outside your display range *transparent*. This can help avoid visual clutter so you can closely investigate specific values.

Digital & Discrete Values

If you are looking at discrete values (for example, the status of a machine, if a unit is clear to start up, what mode a controller is in etc.), the options are simpler.

A legend appears in the bottom-left corner, explaining the meaning of each of the colours.



Because of the simple nature of the data, there are no other options required.

Properties at Distance

It can be quite difficult to see values at a long distance, which is why ARDI-VE supports **voxel conversion**.

When you are so far away from your assets that they are all very small on-screen, ARDI attempts to make your properties *larger* to compensate.

For example, if you were looking at the speed of an engine in a car, then you zoom out so far that the engine is hard to see, ARDI will convert the entire vehicle to a single box, allowing you to still see the values even though you're now unable to see the engine.

This feature is very useful for when you have a number of items scattered across your 3D environment and you'd like to look at them all at once.

Note that this feature only activates if **all** of your assets with the property you're watching are small.

Simply approach the assets again, and they'll turn back to normal.

Relationship Walking

Introduction

ARDI not only knows where your assets are, it also knows how they are *connected* to one-another. These connections – both physical (such as pipework) and logical (such as a controller) – can be seen using the *Relationship Walker*.

To open the relationship walker, simply click on any asset and press the ‘chain’ button (see Figure 5 on page 20 for an illustration).

When you hit the button, the Relationship Walker begins.

The Relationship List

The layout of ARDI-VE changes slightly when you enter the Relationship Walker.

Similar to what happens when you view a property, the background and parts of the environment will fade from view, allowing you to focus more clearly on the assets.

All of the assets will disappear, except for those directly* connected to the selected object.

ARDI will also draw lines between the assets so you can determine the *direction* of the relationship. These animate to show the direction of flow between the two items (ie. is the object giving water to the selection, or is the selection giving water to them?).

However the most significant difference can be found on the left-hand side – this is a list of relationships that the current asset has with its neighbours.

* The Relationship Walker only includes those assets that actually appear in your 3D environment. In some cases, small equipment (such as filters, isolators, sampling valves etc.) may not be present in the environment, so they will be skipped and instead you will be shown the first *available* asset.

The Sidebar on page 22.

At marker **3**, you have the **time travel control**, which is used to adjust the time and context you are viewing. This is covered in more detail in the *Changing Time and Context* on page .

Getting Around

To begin with, you're going to need to know how to get around your 3D environment.

There are two distinct movement modes that you can use in VE – **orbit** and **flight** – which you can easily move between.

Flight Movement Mode

Ever wish you could get a birds-eye view of what you were working on? Well now it's possible. Flight is the initial movement mode you'll be using when you open an ARDI virtual environment.

In flight mode, you use your mouse to move your head, and use keyboard controls to move forwards, backwards and side-to-side.

Movement is relative - pushing 'forwards' always results in you moving *in the direction you are facing*. So if you are looking down when you press forwards, you'll drop. If you look up and push forwards, you'll rise.

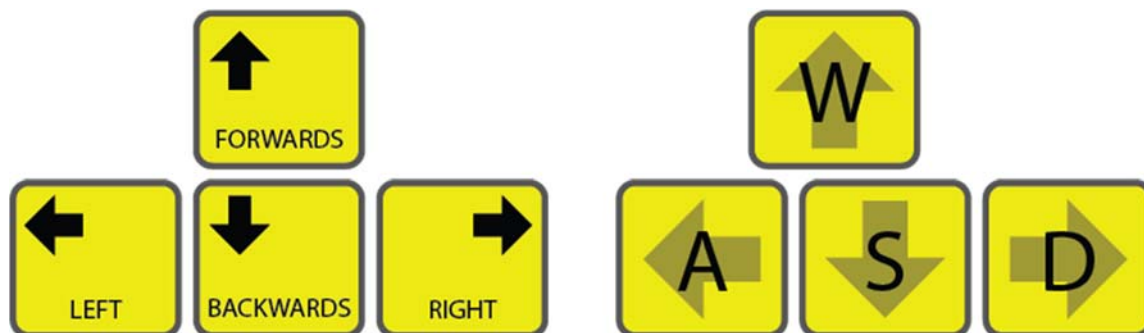


Figure 1 Standard Movement Keys

The arrow keys are the main way of controlling flight – 'up' for forwards, 'down' for backwards, and left and right to perform a 'strafe' or side-step.

The 'WSAD' keys are also supported as an alternative to the arrows.

You left-click and drag the mouse to move your head, allowing you to change direction. You can move your head *and* your body at the same time – this lets you fly smoothly through your environment.

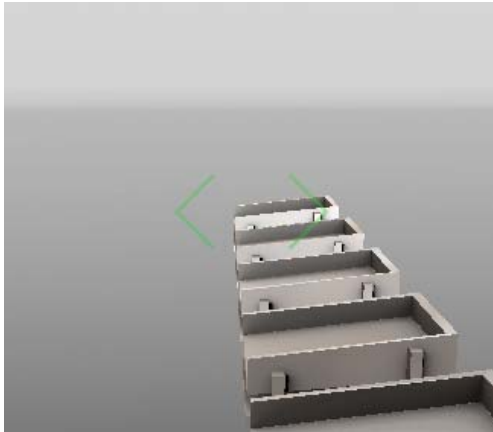


Figure 2 Flight Movement Indicator

When you use the keys to move, a green indicator will appear in the center of the screen to help you guide yourself towards objects – simply line your target up in the center of the indicator and hit ‘forward’ to get closer, or ‘backwards’ to pull away.

When you stop moving, the indicators will slowly fade away, allowing you a clear view of the environment.

The speed of your movement changes depending on the size of your environment. The larger an area your assets cover, the faster the camera moves.

If you need an added burst of speed, hold down the ‘shift’ key when moving – this will allow you to move from place to place quickly.

If you need finer control, holding ‘control’ when moving will slow you down, letting you work your way through tight equipment or fine detail.

Orbit Movement Mode

The orbit movement mode is a little easier for beginners and is very useful when your virtual environment is ‘flat’ (ie. isn’t split up across multiple floors and levels).

When orbiting, the camera is locked onto a particular asset – for example, the product screen that is shown below...

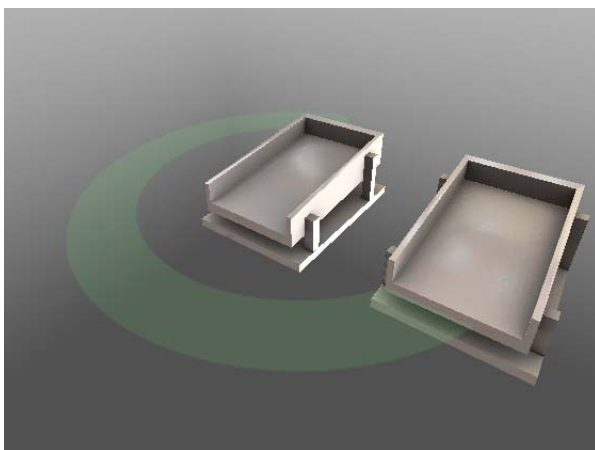


Figure 3 Orbit Movement Indicator

The spinning green circle you see around the object indicates that you are currently **orbiting** it.

By left-clicking and dragging (the same way you move your head when flying), you’ll instead rotate *around the object*. This lets you quickly move to see the asset from all angles.

You can zoom in and zoom out by using the *mouse wheel*. Spinning the wheel forwards will move you closer to the asset and backwards will move you further away.

Moving from Flight to Orbit

There are several ways to move from flight mode to orbit – below are a few examples.

- **Double-clicking on an asset**
- **Searching for an asset**
- **Choosing ‘Focus’ from the asset menu**
- **Picking a new camera angle from the Camera menu**
- **Opening the Relationship Walker**

Each of these actions will zoom in on the asset and begin orbiting it.

Moving from Orbit to Flight

All you need to do is touch any of the flight control keys and you'll be taken out of orbit mode back into flight.

Inside / Under / Too Close To Objects

One thing that can be disorienting for users who aren't aware of it is that it's sometimes possible to fly *into* your assets, *underneath* the ground or simply get far too close to an item. When you do, you might find that you end up with strange, chunky shapes in your view.

Don't panic – simply fly out of the object you've wandered into. 3D objects are only drawn from the *outside*, meaning that they can look very strange should accidentally wander inside one. The same also happens when you get extremely close to them – parts pass 'through' the camera, which means you end up seeing the strange world inside the object.

Going Pro – Using WSAD

The W, S, A & D keys are the most commonly used movement keys in PC gaming. ARDI-VE supports the use of these keys as well as the arrows.

Although they don't do anything differently to the arrow keys, their placement is more comfortable for right-handed users, allowing plenty of space between both hands. The WSAD keys also are significantly closer to neighbouring keys, such as SPACE, SHIFT and CTRL, which allows you to easily operate other controls while both moving and controlling the mouse.



Figure 4 - WSAD In Action

Here, you can see how using WSAD not only keeps the right hand on the right-side of the keyboard, but it also allows other buttons to be operated by the thumb and pinkie fingers.

This allows you to adjust your speed with shift and control without you needing to release either the movement keys or the mouse.

Interacting with Assets

Selecting Assets

You can **select** an asset by clicking it with the mouse, or by searching for it (see Searching for Assets on page 30)

When an asset is selected, the **asset information panel** appears on the screen, showing any current information.

Figure 5 The Asset Information Panel

The right-hand side of this popup contains a menu of options.



Close Popup

Closes the popup, hiding the detailed asset information.



Dashboard

Takes you to the Web Dashboard in your default browser. From the dashboard, you can access properties, charts, maps, media files and more.



Actions

Allows you to focus on the asset, filter for similar assets and control visual behaviours (such as leaving a path behind it when it moves).



Relationships

Pressing this button opens the **relationship walker**, allowing you to see all of the connections between this assets and those other assets that it's connected and related to.



Properties

Show a list of properties. This is the default list that is shown when you first click on the asset.

Zooming In on Assets

Double-clicking on any asset will automatically zoom-in on it and begin *orbiting* it. ARDI will take control of the asset and move the camera so that you are looking at it from the front.

Near Edges and Off-Screen

The selection panel will automatically adjust its position to try to stay visible as you move or turn.

If the panel is completely off-screen, an arrow will appear on the outside edge of your view, showing you the direction to turn to bring it back into view.

Viewing Properties

Being able to see your assets in their locations is useful, but where ARDI is truly powerful is when you look at your *properties*.

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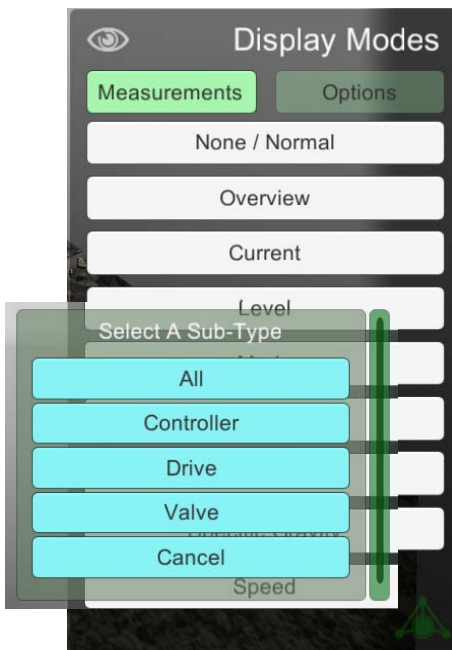
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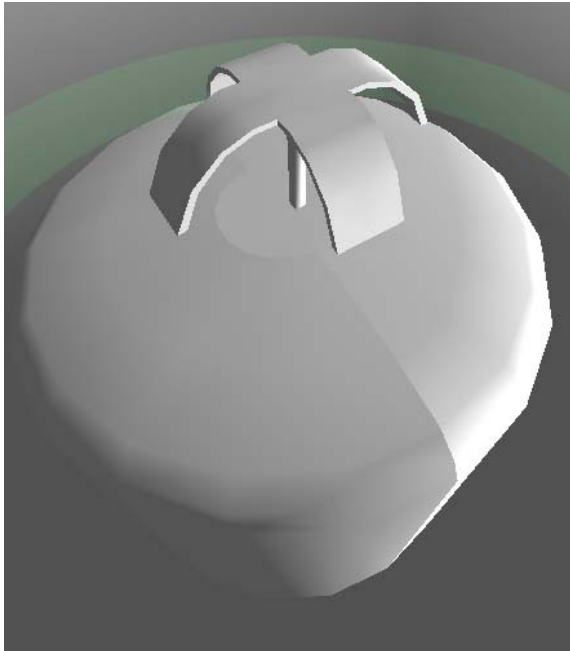


Figure 6a A Tank Agitator - No Display Mode

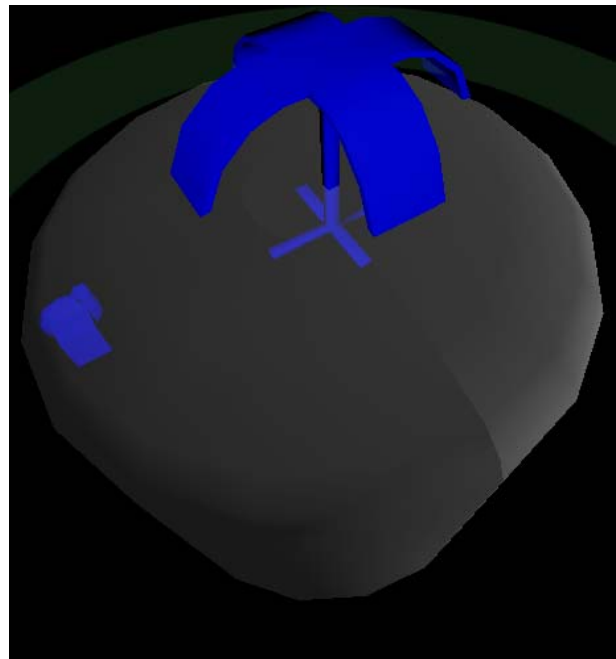


Figure 6b A Tank and Agitator - AC Current Use

Analogue / Continuous Values

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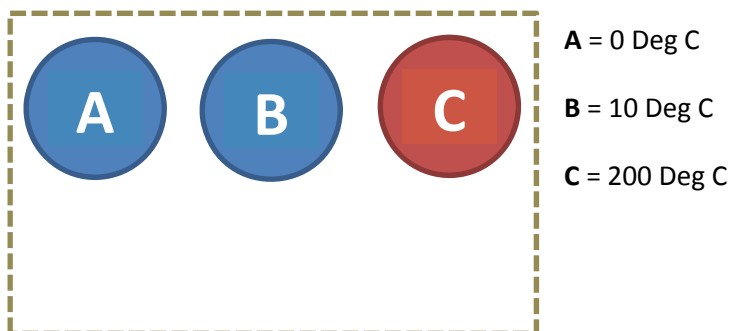
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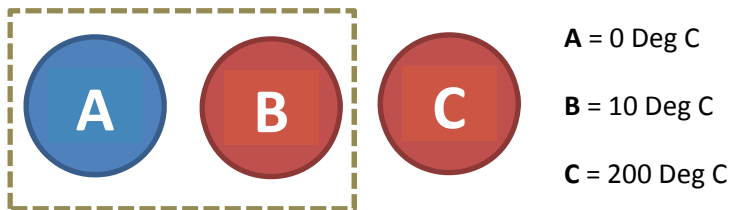
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Just like when your eyes adjust to new light levels, adjustment from a range of 0-200 degrees to 0-10 degrees doesn't happen instantly, but instead occurs over a few seconds.

Manual Adjustment

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This allows you to narrow your scale to look at smaller ranges. It's particularly effective when you want to look for a particular event, such as a switch trip-point or where a process when wrong – you can see small changes even amongst radically higher or lower temperatures.

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For example, if you were looking at the speed of an engine in a car, then you zoom out so far that the engine is hard to see, ARDI will convert the entire vehicle to a single box, allowing you to still see the values even though you're now unable to see the engine.

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Similar to what happens when you view a property, the background and parts of the environment will fade from view, allowing you to focus more clearly on the assets.

All of the assets will disappear, except for those directly* connected to the selected object.

ARDI will also draw lines between the assets so you can determine the *direction* of the relationship. These animate to show the direction of flow between the two items (ie. is the object giving water to the selection, or is the selection giving water to them?).

However the most significant difference can be found on the left-hand side – this is a list of relationships that the current asset has with its neighbours.

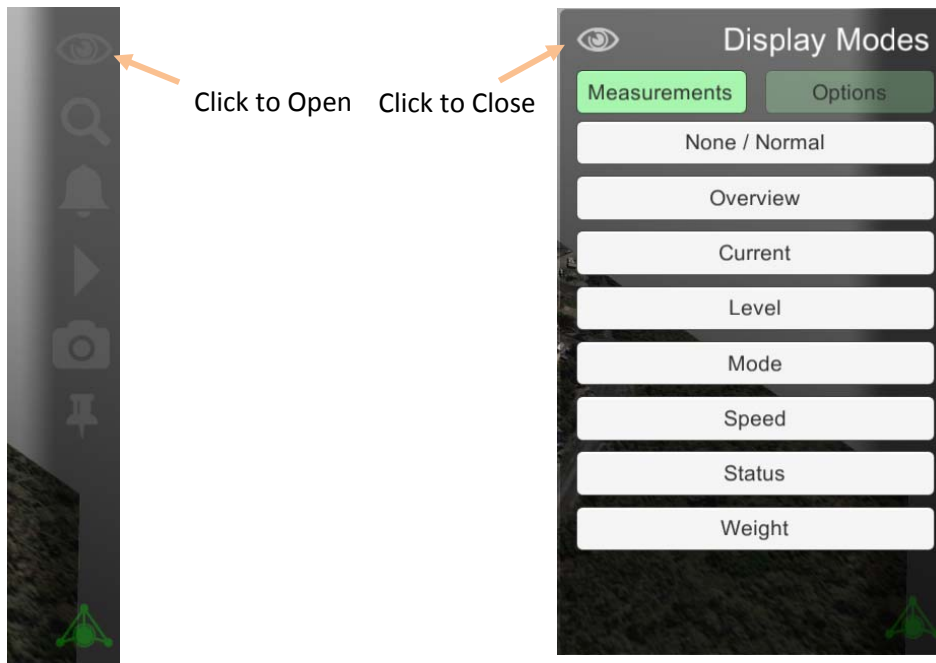
* The Relationship Walker only includes those assets that actually appear in your 3D environment. In some cases, small equipment (such as filters, isolators, sampling valves etc.) may not be present in the environment, so they will be skipped and instead you will be shown the first *available* asset.

The Sidebar

Using the Sidebar

The sidebar gives you access to some of ARDIs more powerful features.

Each button on the sidebar opens a virtual 'drawer' with options within. Left-click once to open the drawer, then press the image again (which will be in the top-left corner of the drawer) to close it.



Display Options

View property values (for example, see the levels inside your tanks or the power consumption inside your motors) and toggle visual options.



Search

Opens the search drawer, allowing you to search for assets by name, reference number or property.



Alarms

Shows a list of all current alarms. Clicking on the alarms in the list takes you directly to the asset that is in alarm.



Playback and Events

Play back scripts, videos and 3D content, or quickly travel to particular points in time.



Camera Control

Quickly change your camera angle to view assets from different angles, and save your preferred camera angles for easy re-use.



Pins

Show a list of 'pinned' properties – properties that you've chosen to monitor while you aren't looking at the asset they belong to.

Display Options

Display options are split into two tabs – **Measurements** and **Options**

You move between them using the two green buttons at the top of the screen – the brighter button shows which tab is active.

Measurements

The measurements tab allows you to choose a **Display Mode** – this section has previously been discussed in *Viewing Properties* on page 22.

When you open the display mode drawer, you'll be given a list of the different properties that are present in your environment.

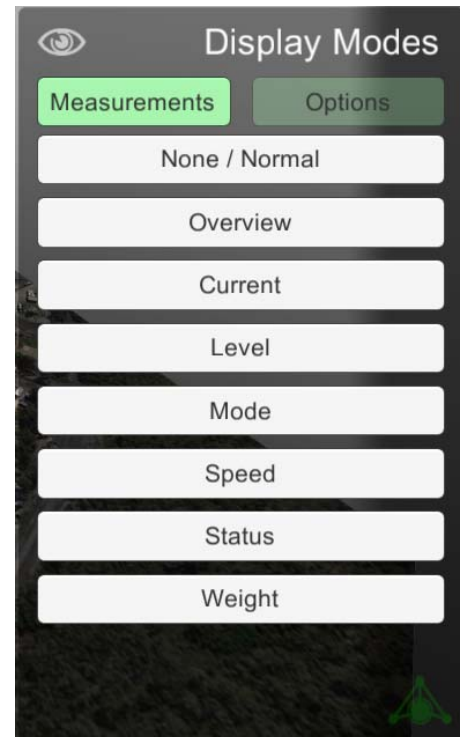
By clicking on the name of the property, your view will change so that...

- Equipment with the property will glow with a colour that represents the property value
- Equipment that doesn't include the property fades out
- Walls and other environment elements fade out
- The background fades to black to more easily see the values

In some cases, there may be **multiple** different types of a property. For example, there might be both *hydraulic* and *pneumatic* pressures.

In these cases, clicking on 'pressure' will then pop-up an additional menu that asks you to choose a particular kind of pressure. This way, systems that operate on radically different pressure levels (ie. air systems that run on 0-1 MPa, and hydraulic systems that run on 0-50MPa) don't obscure each-other.

Display modes also have some additional user interface elements to help you interpret what you're seeing – see *Viewing Properties* on page 22.



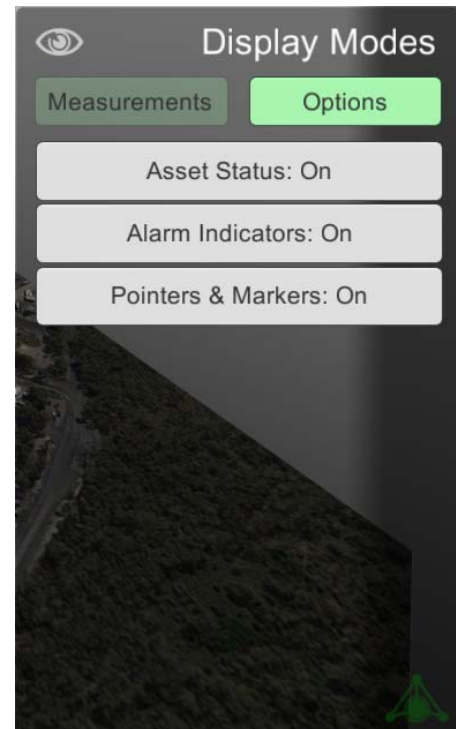
Display Options

The **Display Options** section include buttons that turn visible indicators and markers on or off.

Asset Status indicators are glowing rings that appear around assets to indicate their digital status, such as 'Running' or 'Stopped'. You toggle them off with the first button.

Alarm Indicators are small warning signs that appear over each of your assets that have at least one active alarm. You can toggle them on and off with the 2nd button.

Pointers and Markers turn off additional effects, clearing up your view of the scene at the cost of being unable to see some information.



Searching for Assets

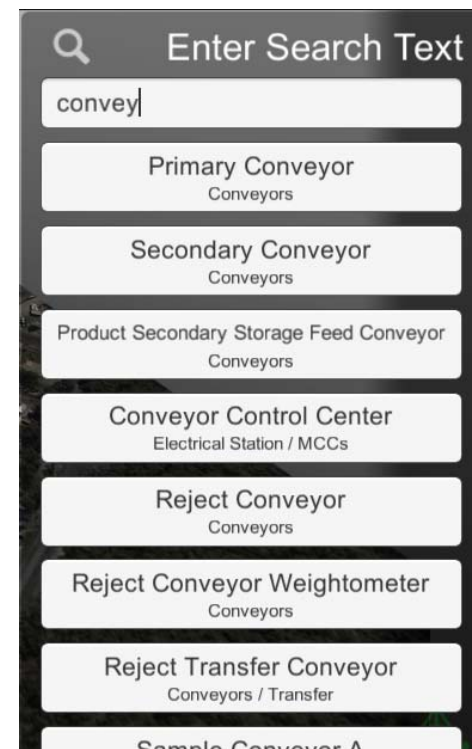
The Search drawer allows you to search for assets in your 3D environment.

You can search for anything, including tag/reference numbers and in some cases even model numbers.

There is no need to press 'enter' – the search will begin a few moments after you type the last character. In the example to the right, the user only typed the beginning of the word 'Conveyor' and it returned a selection of results.

Like all ARDI lists, you can scroll using either the scroll wheel or by dragging.

Click on one of the results to be taken directly to the asset, if it's present in the environment. Note however that these search results include *all* ARDI assets – you may search for an asset that doesn't exist in the area of the plant you are viewing.

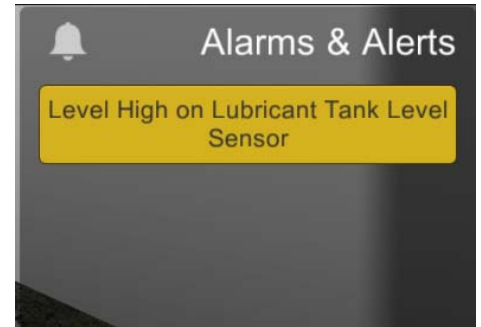


Active Alarms

The alarms drawer allows you to see a list of alarms that are currently active.

The drawer is very simple to use – simply click on an alarm to be taken to the device.

There are no additional tabs or functions on this drawer.



Playback & Events

This menu section includes three tabs – **Scripts**, **Recent** and **Events**.

Scripts

Some ARDI 3D environments include *scripts*, which take control of the camera and can take you on a walkthrough of a process or demonstrate how the plant operates.

If any scripts are available, they'll appear in the list – simply click on them to begin playback.

In some cases, this list may also include video files or web links to content that covers the site as a whole.

Recent

The Recent list contains several options that cover recent periods of time – for example, there are time frames such as **Last Hour**, **Today** etc.

Click on these time frame names to look back at that period in history. For more information about how this works, see *Changing Time and Context* on page 37.

Events

ARDI servers can optionally show *events*, which are time-frames that may be of interest to you. For example, each of your shifts may appear in your event list, allowing you to quickly fast-forward through your day shift.

These time frames can represent anything – a process batch, the construction of an individual product ID etc.

Like the 'Recent' list, clicking on any of these events will adjust the Time Travel control and take you back in history – see *Changing Time and Context* on page 37.

Camera Control

The options in this drawer allow you to adjust the position of the camera, save the position of your camera as a favourite, and load previous cameras as needed.

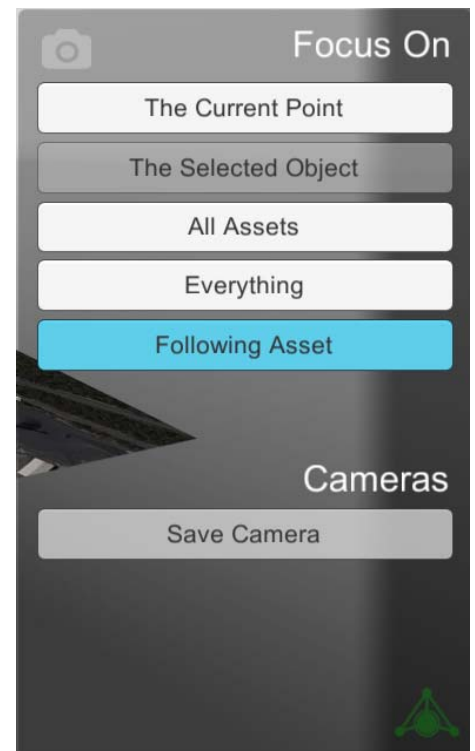
Focusing the Camera

The options under **Focus On** allow you to adjust the angle and position of the camera.

To do so, first choose what you want to look **at** (see the list below) and then a popup will appear so you can select the **angle** to view it from.

Focus Targets:

The Current Point	The location of the camera
The Selected Object	The object that is currently selected
All Assets	All of the assets in the environment
Everything	All assets <i>and</i> the environment itself



Angles:

Automatic	Let ARDI select the angle. This is usually slightly above and to the right of the front of the target, which is a good initial angle to use in most cases.
Above / Top	Look at the target from directly above
Back	Look at the target from direct behind
Bottom	Look at the target from underneath (note that if the environment doesn't allow this, you'll be taken to the top instead)
Front	Look at the target from directly in front
Left	Look at the target from the left hand side*
Right	Look at the target from the right hand side*

* Note that all options other than automatic are based on the sides of your *environment* and not of the selected asset.

Following Assets

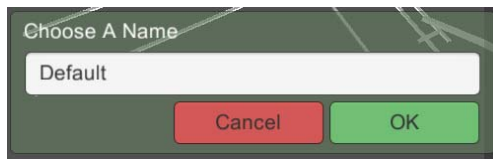
Follow Asset is a simple toggle – when you double-click on an asset to orbit it, ARDI normally also follows that asset if and when it moves, keeping it in focus.

For example, if you were to double-click a car, when the car proceeds forwards, your camera will move forwards with it.

If you'd like to disconnect the camera from the asset you're orbiting, hit the blue 'Following Asset' button. The camera will then remain in place when the asset moves away.

Saving and Loading Cameras

You can save a camera in ARDI by simply placing your camera, opening the Camera Control menu and pressing 'Save'.



You'll be prompted to select a name for the camera.

To load a previously saved camera, simply click the name of the camera.

To delete a camera, click on the 'x' button next to the camera you'd like to remove.

NOTE: If you name your camera 'Default', this will then be the camera that ARDI automatically uses when you first connect. This is particularly useful if you're focused on a mobile asset.

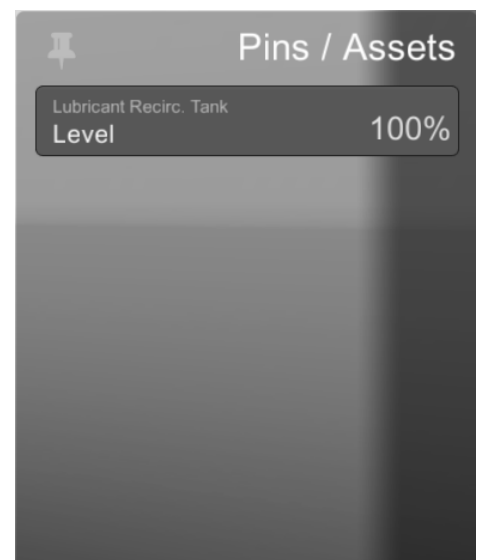
Pin List

This drawer contains a list of your *pins* – measurements that you've placed in the drawer so you can keep an eye on them, even though you're looking elsewhere.

You add pins by clicking on the measurements or properties after selecting an asset.

For example, if you'd like to keep an eye on the level in your tank while you look at the filters that are down-stream, you can click the tank and then click on the 'Level' measurement in the popup.

The data will appear in the Pin List and will be accessible whenever you like.



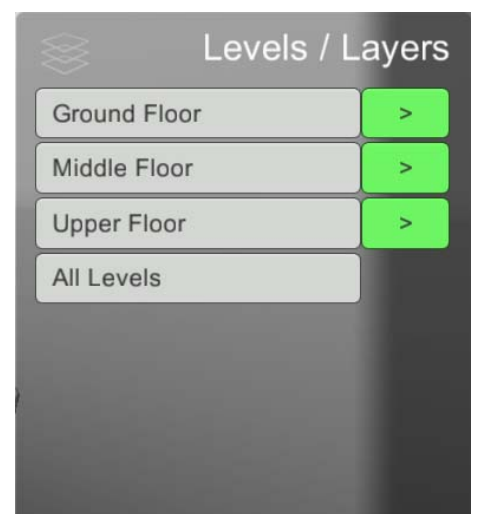
Layers and Levels

*Note that this menu option only appears in **some** ARDI-VE environments.*

If available, this drawer allows you to turn the various levels or layers of your environment on or off.

In multi-storey buildings, this allows you to remove the walls, floorplans or other elements from the environment, leaving only the assets behind. It's an effective tool for removing clutter that can get in the way when you are trying to compare information.

Similarly, some levels may have several layers, giving different types of information. For example, there may be a layer showing hazards, points where maintenance will take place, or unsafe work areas.



Each layer has two controls – a **focus** and a **toggle** control.

The larger control on the left (containing the name of the layer) is the focus control – touching this will remove all of the other layers, leaving only the selected one behind.

The smaller controls on the right (containing an arrow) is the toggle control – touching this one toggles the layer on and off.

The **All Levels** button brings all of your layers in (or pushes them all out if they are already in).

Other Interface Elements

The ARDI Button

The ARDI icon found in the bottom-right of the screen performs two functions.



Connecting to Other Servers

If you'd like to change the ARDI server you're connected to, simply touch the icon. It will pop open your list of recent servers and allow you to add new ones if you wish. See 'Connecting To ARDI'.

Connection Status

The colour of your ARDI icon also gives you the current *connection status*.

Colour	Meaning	Description
Black/Grey	Disconnected	The connection is either not needed, or has failed.
Green	Connected	Live data is arriving. Flashes white when data updates occur.
Red	Connecting	Trying to connect to ARDI
Purple	Server Full	Exceeded ARDI server simultaneous user limits

If you are nearing the maximum number of concurrent users on your ARDI server, ARDI-VE may begin to 'fight' other clients, trying to get new data updates. In this case, you will see the icon occasionally flash green (*connected*) as it briefly connects, then fall back to flashing purple (*server full*).

Changing Time and Context

Comparing Times and Contexts

