



# VALD

# ForceDecks

Instruction Manual for FDMax, FDLite (v.2), and FDMIni

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# 1 Important Notice

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## 1.1 F.C.C. Notification

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**Caution:** The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**Note:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with FCC's RF radiation exposure limits set forth for an uncontrolled environment. End user must follow the specific operating instructions for satisfying RF exposure compliance. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.



## 2 Introduction

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This document provides information about the installation and use of the FDMax, FDLite (v.2), and FDMINI ForceDecks systems, including the assembly of hardware and installation of software.

## 3 Welcome to ForceDecks

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ForceDecks are a dual force plate and auto-analysis system, used to analyse an individual's balance, strength and movement strategies in a range of exercises and jumps.

The collection of ForceDecks data is about measuring different muscle characteristics, in controlled situations.

Whether a practitioner needs to assess or treat:

- Musculoskeletal;
- Neurological;
- Orthopaedic;
- Geriatric;
- Performance; or
- Sports conditions,

they can use ForceDecks to:

- Collect baseline data;
- Monitor rehabilitation progress;
- Monitor injury risk; and
- Improve performance.

Previously, force plates were limited to laboratories and elite sporting teams and involved a time-consuming and complex process to analyse the data collected.

With the ForceDecks portable force plates and suite of software, practitioners are able to collect force plate data on the road and see auto-analysed results in real-time.

Practitioners can then use ForceDecks results to make decisions on an individual's training, performance, readiness, or rehabilitation, among other applications.

The ForceDecks system can:

- Provide immediate feedback to the individual and practitioner that is easy to interpret;
- Minimise the time spent testing; and
- Make the assessment of large groups of individuals practical (e.g. sport teams and defence personnel).

## 4 Getting Started: ForceDecks Hardware

ForceDecks consists of a pair of connected uni-axial force plates. This means they produce vertical force data only.

Each force plate is loaded with four highly sensitive strain gauge sensors.

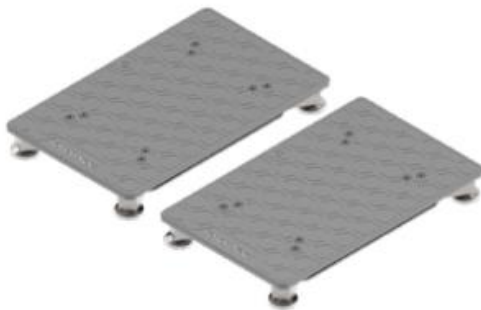
When an individual is in contact with the plates, the sensors will detect movement within the strain gauge, and the strain gauge will compress in proportion to the amount of force applied.

This force causes a change in voltage within the sensors, that ForceDecks then calibrates to measure how much force has been applied. This enables ForceDecks to collect total force data over time.

### 4.1 ForceDecks Components

The ForceDecks FDMax, FDLite (V.2) and FDMINi systems consists of the following hardware:

2 x Force Plates



2 x Foam Surrounds



1 x Interplate Cable



1 x USB Cable



1 x Wall Adapter





## 4.2 ForceDecks Setup

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ForceDecks plates can be mounted on:

- Steel bases;
- Set into weightlifting platforms; or
- Used freestanding on any flat, hard surface.

## 4.3 Floor Considerations

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ForceDecks are designed to be mobile, however it is important ForceDecks are mounted on a surface that is:

- As rigid as possible; and
- As flat as possible.

For example, concrete floors are ideal, whereas sprung floors are not suitable.

Rebounding vibrations or ringing may occur if the platform is placed on the wooden section of some Olympic lifting platforms.

**Note:** *If clients are unsure about the rigidity of their floor, they can check for vibrations by examining a force-time trace or by sending a recording to [support@vald.com](mailto:support@vald.com) for assessment.*

We also recommend using a spirit level to identify an even part of the floor and marking out the space if clients are planning to move the plates.

## 4.4 Space Considerations

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If the force plates are to be embedded into the ground or into a raised lifting platform, it is important to leave adequate space around the plates to prevent contact with the surrounding walls and to allow access to cables.

### 4.4.1 Preventing Crosstalk

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Crosstalk is the unwanted transfer of force between plates. This can occur when two plates are in contact, potentially resulting in inaccurate readings.

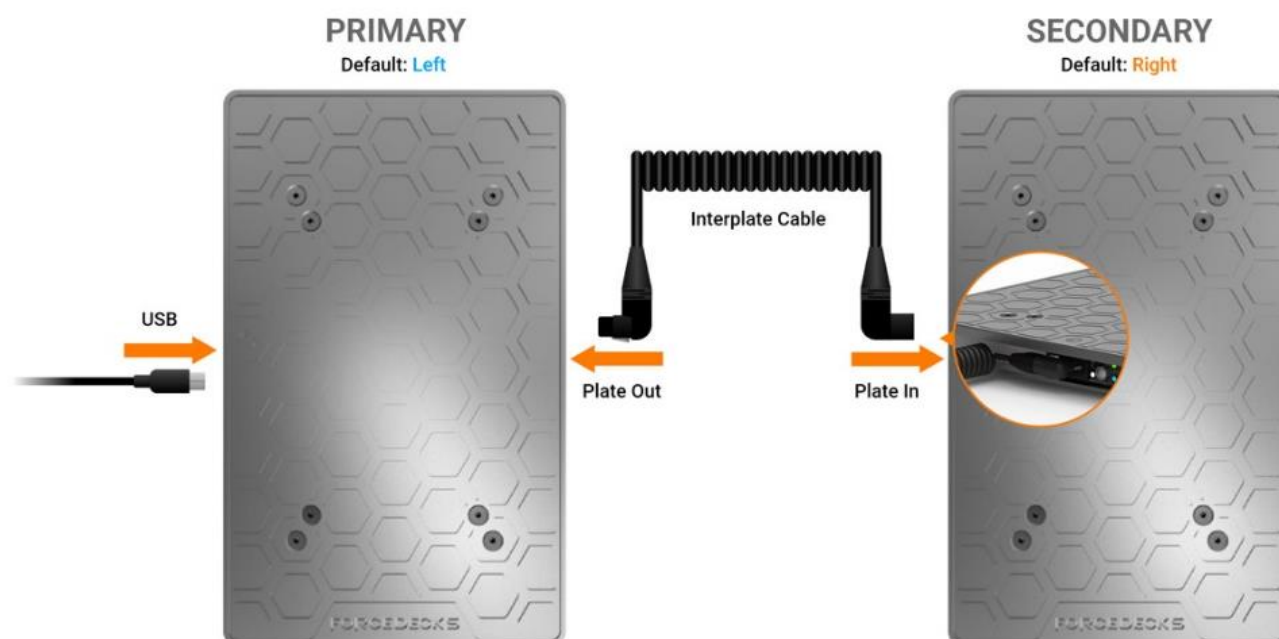
It is important to leave a small gap between the left and right plate to minimise interference and a small gap between the outside edge of the safety frame or casing if applicable.

## 4.5 Cable configuration

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Both V.2 ForceDecks plates are identical, and the orientation of the Interplate Cable determines the default left plate (Primary) and right plate (Secondary) in the ForceDecks software.

**Note:** It is advised to follow the below configuration to prevent having to adjust left and right plate settings in the ForceDecks software.



The ForceDecks system consists of a 'Primary' plate and a 'Secondary' plate.

It is important to ensure cables between the plates and power source are routed to prevent them being stepped on or caught underneath the plate, as this can cause instability, potentially affect measurements and/or damage the cables.

## 4.6 Battery

Each ForceDecks plate contains a rechargeable battery. The battery life and recharge times are as follows:

### Approximate battery life (from full charge)

FDLite, FDMax	50+ hours
FDMini	20+ hours

### Approximate charge time (from empty charge)

FDLite, FDMax, FDMini	24 hours
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It is recommended to connect ForceDecks plates to a power source for at least one full day every month, as the batteries will slowly discharge over time when not in use.

**Note:** ForceDecks will be partially charged when shipped to clients, enabling them to use the ForceDecks straight out of the box.

### 4.6.1 Charging ForceDecks

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There are two ways to charge ForceDecks batteries, using the supplied USB cable.

The ForceDecks batteries will charge when:

1. Plugged into a USB port on a computer, or
2. Plugged into the mains power with a USB wall adapter (mains power).



- Do not charge a device if your Mini-USB cable or wall adapter are damaged.
- While other brands of wall adapter may successfully charge your device, we recommend only using VALD supplied adapters.
- Your ForceDecks will automatically turn off after a period of inactivity.

### 4.6.2 Battery Status

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The battery status LED on each force plate illuminate according to the status of the plate's battery.

The LED will:

- Illuminate green – when fully charged.
- Illuminate amber – when moderately charged.
- Illuminate red – when charge is low.
- Not illuminate – when turned off or has no charge.

## 4.7 Turn On and Off

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Before turning on ForceDecks it is important to confirm the plate setup, to identify the Primary plate.

When the Primary plate is turned on it will automatically pair with, and power the Secondary plate.

**Primary plate - on**





**Note:** When turning on the ForceDecks, if the power button is pressed on the Secondary plate, the plate will turn on then straight off again.

## 5 Getting Started: ForceDecks Software

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ForceDecks software is the heart of the ForceDecks system, taking previously laborious tasks and performing them automatically to facilitate rapid testing of individuals in time-pressured environments. These tasks include:

- Identifying what type of movement was performed;
- Identifying key characteristic time points within the movement (e.g. Start of Movement, Take-off, etc); and most importantly
- Calculating actionable summary results.

The ForceDecks software suite includes:

- ForceDecks Windows application
- ForceDecks iOS application
- ForceDecks Jump
- ForceDecks LeaderBoard, and
- VALD Hub.

\*Users must activate their ForceDecks software within 7 days of installing the software onto their device, and annually thereafter.

## 5.1 Setup Your Software

To setup your software, scan the QR code or



Or visit our website to access the ForceDecks Starter's Guide:

<https://support.vald.com/hc/en-au/articles/4999028480025>

## 5.2 Minimum Device Requirements

The following specifications are recommended for any device running ForceDecks Windows software:

Windows		
	Operating System	Windows 7 x 64 or later
	Processor	Intel i5 / i7 / i9
	Ram	8 GB or greater
	Storage	500 MB minimum for install
	Ports	1 x USB 2.0 / USB 3.0

The minimum device requirements for operating the ForceDecks iOS App are as follows:

iOS		
	Operating System	iOS (12 or later)
	Bluetooth	BLE 5.0
	Compatible Devices	Refer to <a href="#">ForceDecks iOS App Compatible Devices</a>



## 5.3 Bluetooth Connection

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ForceDecks plates (FDMini, LDLite (V2), FDMax) can be connected to a laptop via Bluetooth.

**Note:** To enable Bluetooth connectivity the latest ForceDecks Firmware must be installed, and only one set of ForceDecks plates turned on.

To connect ForceDecks plates to a laptop or iOS device via Bluetooth:

0. Log in to **ForceDecks**
1. Click on **Options**
2. Select **Settings**
3. Select the **Platform** tab
4. Click on **ForceDecks**
5. Change connection types to: **Prefer Bluetooth Device Connection**
6. Click **Save**

## 6 Using ForceDecks

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The VALD Knowledge Base at [support.vald.com](https://support.vald.com) has detailed information, guides, how-to resources, and answers to FAQs.

For detailed instructions to operate the ForceDecks system please visit our website at:

<https://support.vald.com/hc/en-au/categories/4421397081625-ForceDecks>

## 7 Safety, Care and Maintenance

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ForceDecks have no planned maintenance or servicing requirements, however it is best practice to go through the zeroing process before every testing session. (Refer Zeroing section 7.2)

It is also recommended users follow the below care guidelines:

- Keep liquids away from the plates and cables.
- When transporting the plates, ensure the plates are well padded, with no forces being exerted on the plates.
- Avoid any accumulation of dirt, mud or other residues on the plates.