



1540pk - Dynamics System

Version: 0 | DS186

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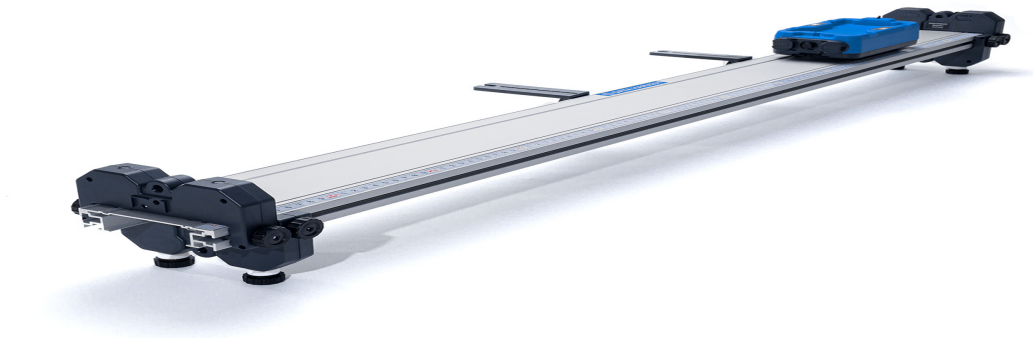
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Introduction

Thank you for purchasing the Dynamics System. We pride ourselves on producing high quality products that meet with the demands of the busy classroom environment. If you have any problems using this product, please read this documentation in full before contacting the Data Harvest support team.



Overview

The Dynamics System and track provides all the tools in one package, with all the accessories you will need to start work as soon as it arrives.

The cart has a wide profile for added stability, and low friction wheel bearings to give consistent data. The 1.2m track provides sufficient space for good quality results in a format that will fit onto most modern laboratory benches, allowing students to study both the theory and practicals at their bench. The Data Harvest Wireless Light Gates fit to the side of the track.

The cart can be used without the track for those longer distances and demonstrations.

Pack Contents

This product is supplied with the following items:

- 2 x Smart Dynamics Self Levelling Foot
- 2 x Smart Dynamics Magnetic End Stop
- 1 x Smart Dynamics Magnet Holder
- 2 x Steel Mass
- 1 x Dynamics Cart Blue or White
- 1 x Dynamics Track 1.2m
- 1 x Spoked Pulley Wheel
- 1 x Dynamics Set Bag of fasteners and fixing



For full assembly parts and instructions please refer to the [assembly instructions guide](#).

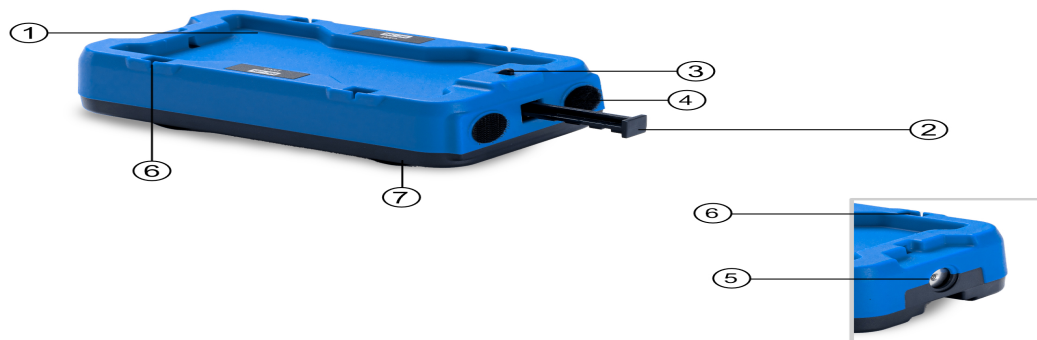
Additional Accessories

To get the most from your Dynamics System, the following item should be considered:

- Smart Wireless Light Gate Sensor
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Operational Overview

The diagram below shows the specific parts of the sensor. Read further to explore the functionality of each part of the sensor.



Bay for masses (1)

2 x 280g masses are supplied with each cart, which can be stacked here.

3 Position Plunger (2)

The spring-loaded plunger has three positions for firing/releasing the plunger.

Plunger release button (3)

This button is used to fire/release the plunger.

Velcro (4)

Each cart has Velcro fitted, for easy connection.

Connection for spoked pulley string & magnets (5)

This is where the magnets are connected, and string can be attached to use the spoked pulley. Please see worksheets, which can be found on our website, for more information.

Interrupt card slots (6)

When using Light Gates/Photo Gates, this is where the double/single interrupt card is fitted.

Wheels (7)

These are the spring-loaded wheels.

Usage Information

The cart is fitted with a unique suspension system that should protect the cart from damage by dropping or over burdening, but care should be taken to prevent this.

- When using the track, use the end stops to prevent the carts from leaving the track.
- Only use low angles of track incline (less than 15 cm of elevation). The system will perform significantly better than traditional dynamics apparatus.
- After storage, use a soft brush to remove debris from the track grooves.
- Do not install the magnetic bumper unless you know you will be using them in the practical work.
- Magnetic repulsion is only for low-speed collisions with other carts whilst using the Dynamics System magnetic end stops. If the speed is high, the repulsion will bounce the carts off the track.

When setting up

- Always check the Handedness of the fixtures.
- Insert the captive bolts required for the light gate brackets first.
- Insert the support / feet second and move down the track by at least the width of the support.
- Insert the end stops last.
- Do not over tighten the securing bolts, you could potentially damage the track.

Both carts provide a spring-loaded plunger

- The plunger provides three different forces to move the cart. Each notch is 1x more than the previous.
- As you push the plunger in, it will click at each position. A final click position is provided to hold the plunger level with the cart's exterior.
- To activate the plunger, tap on the pin on the top of the cart.

The carts and the masses both have a nominal mass of 280g (weigh before use).

For expert work on momentum, collisions, $F=ma$ the mass of the carts and masses should be accurately obtained.

Practical Investigations

This Dynamics System can be used to investigate a number of scientific experiments such as:

When used with one or more Smart Wireless light gates you can study.

1. Speed.
2. Velocity.
3. Acceleration.
4. Momentum.
5. Kinetic energy.
6. Newtons second law.

Depending on how the light gates are used, all measurements can be

1. At A
2. At A then B
3. From A to B
4. Change A to B

If required, an additional single cart can be purchased to extend work into elastic and non-elastic collisions.

The Data Harvest Wireless cart is fully compatible with the track, accessories, and the non-wireless carts.

Online Videos

Learn how to use data logging in the classroom with our Secondary Science Academy demonstration videos, which will walk you through using the new EasySense2 app and show you how to get hands-on with the latest Bluetooth wireless sensors. The video experiments will show you how to get the best out of your science lessons.

New online content is being continuously uploaded onto our YouTube channel, including practical worksheets as well as videos.

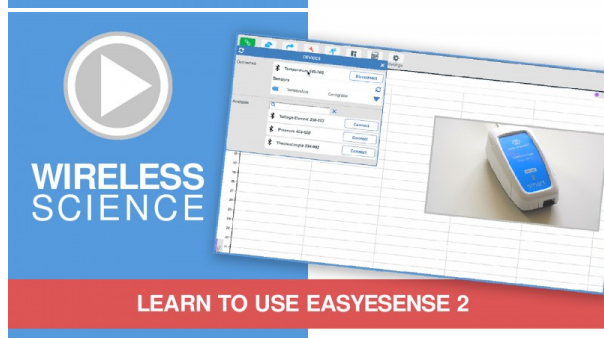
See our website for further information and links.



Explore Bluetooth Sensors

Are you looking to make the jump to our smart wireless sensors? Or have you recently purchased them and want to know more about how they work?

[View video playlist](#)



Explore EasySense2

The core of our science platform is our EasySense2 software. In these videos you will learn everything from the basics of our software to the most in-depth features.

[View video playlist](#)



Explore Science Practicals

See our Smart Wireless Sensors in action with a range of practical experiments. This is the best way to get started with the new Bluetooth sensors!

[View video playlist](#)

Specifications

Please read the following table for sensor specifications.

Feature	Detail
Physical Specifications (Cart)	Weight: approx. 280 g External dimensions: approx. height 65 mm x width 90 mm x length 169 mm
Physical Specifications (Track)	Weight: approx. 1670 g External dimensions: approx. height 107 mm x width 15 mm x length 1200 mm

Limited Warranty

For information about the terms of the product warranty, see the Data Harvest website at: <https://data-harvest.co.uk/warranty>

Product Repairs

When returning goods to Data Harvest, please download and complete the repair return [form](#) to ensure you have sent us all the information we require, and send it to us alongside the item to be repaired. The second page of this form includes a return address label.

If you have purchased a Data Harvest manufactured product via a different company, please also supply proof of purchase.

Postage Charges

- In the event of a fault developing, the product must be returned in suitable packaging to Data Harvest for repair or replacement at no expense to the user other than postal charges.
- There will be no postal charge for the return of repaired goods to any mainland UK address (for other areas, additional shipping charges may apply).

Out of Warranty Repairs

Please visit <https://data-harvest.co.uk/repairs> for the most up to date charges for out of warranty repairs.

Warranty on Repaired Items

Once an item has been serviced and repaired, the product will have 1 year warranty against further failure of the component repaired.

International Returns

Please contact the authorised Data Harvest representative in your country for assistance in returning equipment for repair.

Compliance

This product complies to the following standards

Waste Electrical and Electronic Equipment Legislation

Data Harvest Group Ltd is fully compliant with WEEE legislation and is pleased to provide a disposal service for any of our products when their life expires. Simply return them to us clearly identified as 'life expired' and we will dispose of them for you.

FCC Details

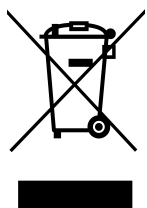
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CE

This product conforms to the CE specification. It has been assessed and deemed to meet EU safety, health and environmental protection requirements as required for products manufactured anywhere in the world that are then marketed within the EU.

UKCA

This product conforms to the UKCA specifications.



Troubleshooting

If you experience any problems with your product, please try the following troubleshooting tips before contacting the Data Harvest support team.

Feature	Detail
How do I use 2 Light Gates at the same time for A-B type experiments?	Only one Light Gate can be connected to the EasySense2 software at a time. Once connected, you need to connect each light gate with the Light Gate connection lead ACC-24

Notices

Please read the following notices with regards to using your sensor

1. The sensor is much smarter than traditional Bluetooth sensors and you are not required to pair the device. If paired, the sensor will not be available to the EasySense 2 app.
 2. When the sensor is connected to a computer, the computer should be turned on and not in sleep or standby mode or the battery may drain instead of charge.
 3. Data Harvest products are designed for educational use and are not intended for use in industrial, medical or commercial applications.
 4. The sensor is not waterproof.
 5. Plastic parts may fade or discolour over time if exposed to UV light. This is normal and will not affect the operation of the sensor.
 6. Only one Light Gate can be connected to the EasySense2 software at a time.
 7. Strong magnets are present, do not dismantle or swallow magnets. Keep away from medical equipment, such as pacemakers.
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Contact Information

To contact Data Harvest directly, please use any of the following channels

Traditional Communications

Data Harvest Group Ltd.
1 Eden Court, Eden Way,
Leighton Buzzard,
Bedfordshire,
LU7 4FY
United Kingdom

Tel: +44 (0) 1525 373666

Fax: +44 (0) 1525 851638

Sales email: sales@data-harvest.co.uk

Support email: support@data-harvest.co.uk

Online Communications

We have active social media support channels using the following platforms

- [Facebook](#)
- [Twitter](#)
- [YouTube](#)

Office Opening Hours

Monday to Thursday - 08:30 to 16:45

Friday - 08:30 to 13:30

Saturday & Sunday & UK Bank Holidays - Closed

PDF Translations

The PDF formatted download of this manual is by default provided in the English (United Kingdom) language. If an alternative translation is available, it will be listed here.

We have for your convenience included a webpage translation feature to the online documentation which will allow you to translate and print individual pages of this documentation.
