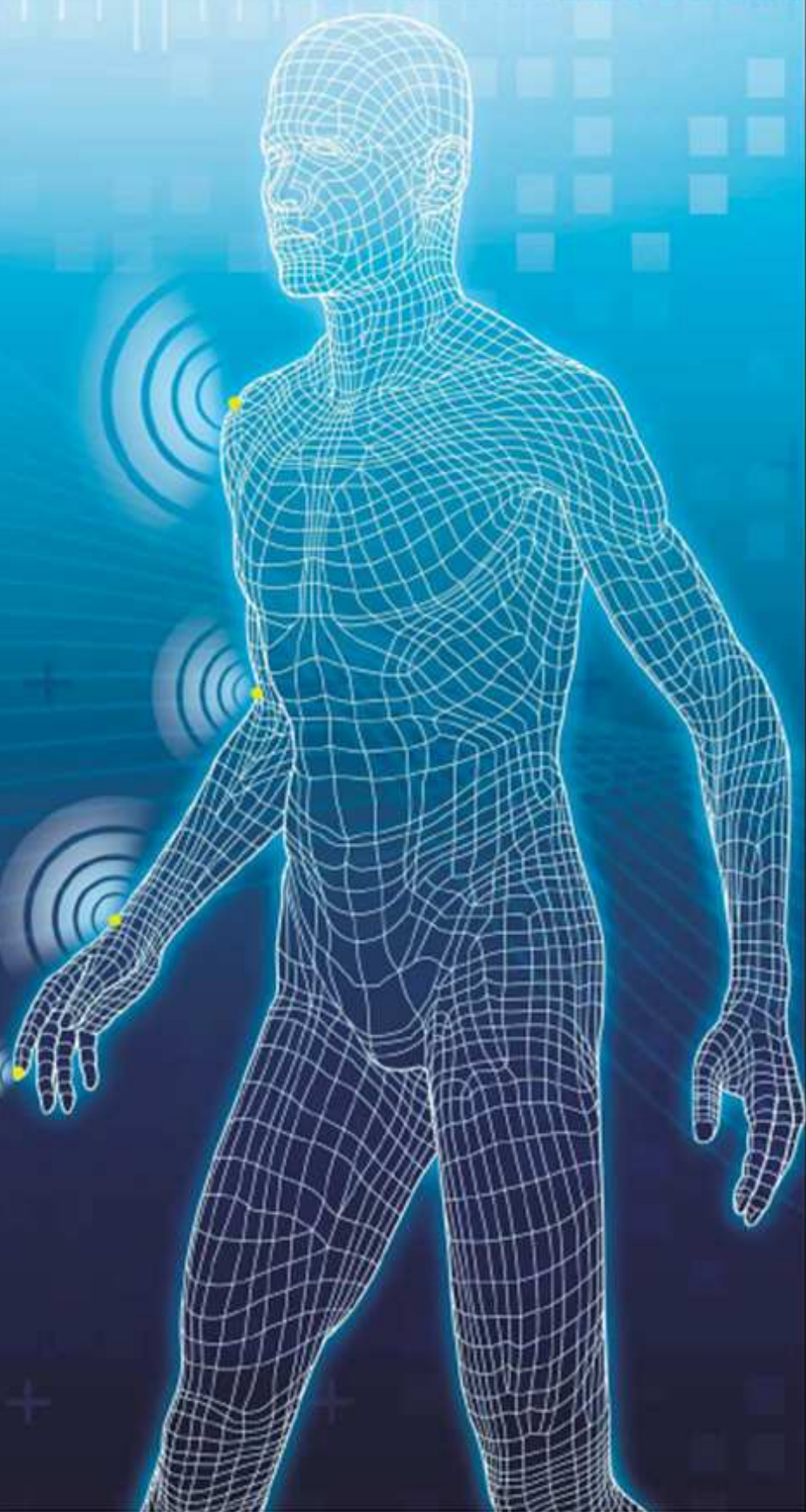




Real-Time Excellence



Mouvement Analysis Solutions  
Product Catalog 2013

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**Codamotion** is a division of:

Charnwood Dynamics Ltd.  
 Victoria Mills, Fowke Street,  
 Rothley, Leicester, LE7 7PJ  
 United Kingdom  
**Tel:** +44 (0) 116 230 1060  
**Fax:** +44 (0) 116 230 1857  
**Email:** [info@codamotion.com](mailto:info@codamotion.com)  
**Web:** [www.codamotion.com](http://www.codamotion.com)

# Introduction

## Company History

Based on a research heritage that stretches back to the 1970s, Charnwood Dynamics Ltd was established as a trading company in 1988, and – soon afterwards – adopted **Codamotion** as the brand name for its range of 3D Movement Analysis products and solutions.

This world-leading **Codamotion** range is built in-house, and is designed to integrate with a range of devices such as force plates and EMG systems. Today, Codamotion is the first choice of researchers and clinicians in a variety of disciplines:

- Clinical Analysis
- Biomechanical Research
- Sports Science
- Neuroscience
- Ergonomics
- Virtual Reality



*The Standard cx1 CODA unit*

The company head office is in the United Kingdom in Rothley, Leicestershire. Further sales and support staff are based in Marseilles, France. Worldwide support is provided through business partners and through direct email, video-conferencing, telephone, and fax.

## Codamotion Active Technology

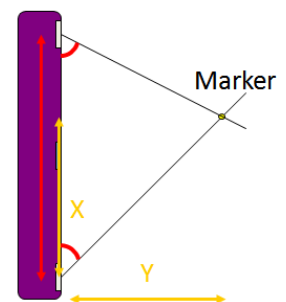
Codamotion's measurement technology uses miniature infra-red '**active**' **markers**, each with their own unique identity, to track the key positions on any subject. Signals from these '**active**' **markers** are beamed to three **masked linear arrays** inside a '**CODA**' unit which provides an immediate and precise 3D measurement.

### What is a 'CODA' Unit?

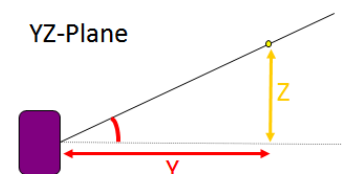
A 'CODA' is a standalone measurement unit capable of tracking 3D marker positions in real time (see standard cx1 unit above). Three masked linear arrays in each unit combine to measure X,Y and Z coordinates of each marker.

- Each CODA makes its own independent measurements, dramatically reducing occlusion rates compared to multi-camera systems
- Each CODA is factory calibrated, so there is no need for calibration by the user... ever
- Each CODA weighs just 5kg, and can be unpacked and operational anywhere in less than ten minutes
- Multiple CODAs can be easily aligned as a single framework to extend the measurement volume covered.

XY-Plane



YZ-Plane





## What is an 'Active' Marker?

'Active' markers are those which generate their own light. They flash as opposed to reflect.

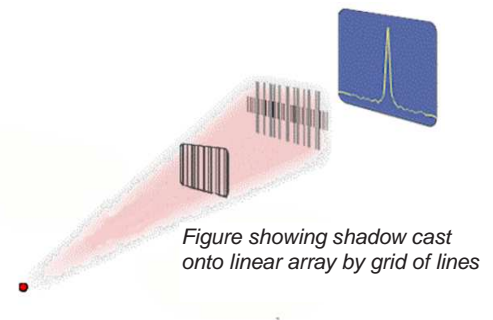
- Active Marker identity is automatic and totally secure, so marker labels cannot be misidentified
- Active Markers require no post-collection label sorting
- Active Marker systems require no pre-filtering, idealization or manipulation of collected data, which – in 'passive' marker systems – can dramatically reduce the effective frame rate and the ability to capture fine movements
- Active Markers make 'real-time' capture and display possible



## What is a Masked Linear Array?

A Masked Linear Array (MLA) measures the pattern produced when a marker casts a shadow on an array through a grid of lines (the mask).

- The MLA provides higher accuracy by measuring patterns of illumination across its whole array surface, not just the minute fraction used when a focused dot falls on a 2D camera array
- The MLA doesn't suffer from non-linear distortions caused by camera lenses
- The MLA is more tolerant of ambient light, so experiments aren't confined to a dimly-lit laboratory
- The MLA has an acceptance angle of over 75 degrees, allowing more measurement volume in less space, with sensor units placed closer to the action for added accuracy.



## Software, Integration and Synchronisation

Our software allows users to extract the maximum information from their data, whether conducting routine clinical analysis or racing to finish and publish the next piece of groundbreaking research. Our latest software suite runs on a Laptop or Desktop PC, or embedded into Codamotion's Active Hub.

The combination of our software and Active Hub (see page ) allows real-time synchronization. Users can synchronize their movement analysis data with data from high speed video cameras, force plates, EMG systems and other third-party hardware. Connections and interfaces for a wide variety of equipment from all popular manufacturers are available. Connected devices can be triggered simultaneously using the Codamotion system as either master or slave. Once collected, the software allows the integrated data to be analysed and presented on a single screen or as part of a single report.

#### Features:

- Easy connection of remote computers, data stores and additional measurement hardware (via an Active Hub)
- Handles real-time data from *CODA* units as well as third-party force plates, EMG systems etc. It also provides user-friendly modules for system setup and protocols, easy data capture, data modelling, statistical analysis and automated reporting
- Offers a comprehensive Software Developer's Kit (SDK) to aid the development of protocols and experimental procedure
- Easily exchanges data with third-party analysis programmes such as Visual 3D and Matlab.

### ***Video Vector Technology***

The Video Vector System (VVS) is a 'new for 2010' addition to the Codamotion range. It is a simple stand alone system, featuring cameras, force plates, touch screen and a VVS control box, which captures, compresses and stores video and force plate data.

Further details and ordering information can be found on page 15.

## Product Ranges

### 3D Movement Analysis Components and Accessories



#### Codamotion CX1 unit:

The standard 3D measurement unit (motion capture device for movement capture.)

Includes factory calibration for standard range. (Tripod is an option – see below).

Part Ref #: CX1-800-1  
ACC-TPA (optional tripod);  
CODA-BRKT (optional cx1 mounting bracket)



#### Standard CX-marker:

An active marker is an encapsulated high-intensity Infra-Red LED (Light Emitting Diode), with a capacitor and solid-state switch which is charged and triggered by a Marker Drive box to emit a 50µs (micro-second) flash at the appropriate time in the cx1 sensing cycle (frame).

Part Ref #: XM-xxx (where xxx is the lead length in mm)



#### Marker drive-boxes:

8 and 2 Way

Each drive-box has a unique location in the acquisition sequence during motion capture, and a marker takes its identity from the drive box into which it is plugged. Drive Boxes are available with 2 or 8 input.



2-Marker boxes have fixed ID numbers (in pairs from 1-28); 8-Marker boxes are switch-programmable from 1-56 (in consecutive groups of 8). 8-Marker boxes can be powered from an external source (see external battery pack ref: OMDBEPPB)

Part Ref #: DMDBC (2-way) & OMDBC (8-way)

4 Way



Markers sold separately

The new 4-marker drive box is half the size of a matchbox and lighter than a silver dollar. The new drive box allows you to power a set of active markers on a body segment without adding a mass of more than 22 grams. Each drive box has the capacity to power up to 4 active markers, is chargeable and programmable via a USB socket and is fully compatible both with existing 2- and 8-marker drive boxes and with the recently introduced range of marker clusters

Part Ref #: QMDB



### 8-Marker Drive Box with External Strobe:

This is a modified 8-Marker Drive Box which has an external strobe input for synchronisation as an alternative to the usual optical sync. Must be used in combination with wired strobe adapter and extension cable.

Part Ref #: OMDBEPPB



### Codamotion Clusters:

Pioneered in-house to eliminate the need for wires to active markers the sophisticated 4-marker rigid cluster is both straightforward and quick to attach and remove from different limb contours. For use in real-time with C-Motion's Visual 3D or with your own analysis algorithms the Codamotion Cluster is an elegant addition to our active marker family of products.

Part Ref #: CLSTR-AD (large) or CLSTR-CH (small)



### Marker Charger Tray:

Charger trays are available for 12x2-marker drive-boxes.

Also available in Combo charger trays for 6x2-marker boxes + 6x8-marker boxes.

Part Ref #: CU-12D  
Combo Part Ref #: CU-6D+6O



### Charging Case:

The Codamotion clusters and 4-marker drive boxes have their own totally self contained Charging Case, an elegant solution for charging, storing and transporting. The charging case comes complete with multiple USB leads, power supply and a large pouch in the case lid for added storage for elastic straps or other accessories. It also provides a further 2 USB ports which can be used to charge additional clusters, 4-marker drive boxes or our 4-marker landmark pointer.

Part Ref #: CU-Cluster



### **Pointer for use with Clusters:**

A simple pointer with markers for use with clusters etc. when marking anatomical points in static trials.

Part Ref #: CLSTR-PTR



### **External Battery Pack for 8-Marker drive-boxes with belt:**

External battery pack for 8-marker drive-boxes integrated in a belt and linked with connectors.

Part Ref #: OMDBEPPB



### **Wired strobe connectors:**

Connectors for external strobe linked to the main power station (mini or active-hub unit- see 'Codamotion Hubs').

Part Ref #: WSEC-500



### **Wired strobe adapter unit:**

Adapter unit to link up to 8 strobe unit together to the main power station (mini or active-hub unit).

Part Ref #: WSAU



### **NEW Alignment Jig**

Alignment jig for easy alignment of CODA units to force plates and laboratory coordinate frames.

Part Ref #: FAJ-2.0



## Codamotion Hubs and Boards:



### Mini Hub:

A MiniHub is a passive unit which provides power and data connections for one or two cx1 units. A control/data connection is made between the MiniHub and host computer (desktop or laptop PC) using a serial RS422 or RS232 data cable (one for each cx1 unit). The MiniHub also routes a hardware sync. signal from one cx1 unit to the other, and has sync. input and output connectors, which can be used to link multiple MiniHubs if more than two cx1 units are used, or to provide a synchronization signal to/from other equipment. The standard unit requires 100-240V AC power input (IEC connector).

Options:

1. Rechargeable battery (12V) instead of AC power supply.
2. Connector for ext. strobe unit or wire-strobed marker drive boxes.

Part Ref #: MHMP or MHMPES with External Strobe option



### New - Active Hub

A 19" rack-mountable industrial computer unit with combined power and data connections for up to eight cx1 units, and optional analogue interfaces for Force plates, EMG, etc.

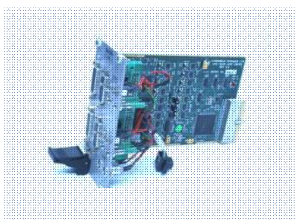
The unit is based on a compact PCI bus (cPCI), and includes a Kontron CP304 single-card computer (1.2GHz Celeron processor, 256/512MB RAM) with front-panel dual-USB, dual-Ethernet, and dual-RS232 connectors.

The standard Active Hub includes a 40GB hard disk and R/W CD drive, pre-configured with Microsoft Windows XP Professional, and it is pre-fitted with 1 x QUB, 1 x 32CADB and 1 x 32CFB, plus monitor, keyboard and mouse.

Options:

1. Second Quad-UART card to support additional 2 or 4 cx1 units.
2. 1x32 or 2x32 channels of analogue input (ADC) with analogue pre-filters (see below)
3. External Strobe connection (power and signals to drive External Strobe Units, or to drive wired-strobe marker control boxes).
4. Firewire card for video input.
5. Wireless LAN card (IEEE 802.11b)
6. PCMCIA card adapter (for standard PC-card devices)

Part Ref #: AHU-CP306-V (Active Hub)



### Quad UART:

The Quad-UART card provides DC power and high-speed RS422 data connections for up to 4 cx1 units via a high-density 26-way D connectors (one connection for each cx1, with individual power switches). This card also provides a programmable sync. generator (to operate the system at different frame rates) and connections for sync. in, sync. out, and external Strobe units.

Part Ref #: QUB



## 32-Channel A:D and Filter boards for Active Hub:

These boards are placed inside the Active Hub to add hardware support for external analogue devices and/or digital triggering. Each analogue board provides 32 single-ended analogue input channels, 8 digital output channels and 8 digital input channels. Analogue inputs are single-sided, and are normally connected in groups of 8 channels via 9-pin D connectors.

The filter board provides anti-aliasing filters for 32 analogue inputs (330Hz – 7.2kHz cutoff).

A second set of boards can be added to give 64 channels of analogue and 16 digital inputs and outputs

Part Ref #: 32CADB (32 channel A:D board)  
32CFB (32 channel analogue filter board)



## TIGS-KISTLER-ACC

Specific to Kistler plates allowing up to two plates to connect directly into the back of CodaHub, without an amplifier.

It's designed so that the LEDs could be on the front if wanted, A cable for each forceplate is needed - for the 9286BA Kistler forceplate the cable is TIGS-9286BA-CABLE. You can have up to two of these panels for each analogue card, so a 32-ch system can run four plates, a 64-ch system eight.



**TIGS-FORCE-ACC** (Vali compatible) - that's the one you'd use for AMTI plates etc. Again, up to two of these panels per analogue card.



## External strobe panel (also for wired markers):

This panel mounted on a mini-hub allows connection of 2 extra strobe units for flashing marker drive-boxes.

Part Ref #: ESUBP

## External strobe unit:

This panel mounted on an Active Hub allows connection of 2 extra strobe units for flashing the marker drive-boxes.

Part Ref #: ESU



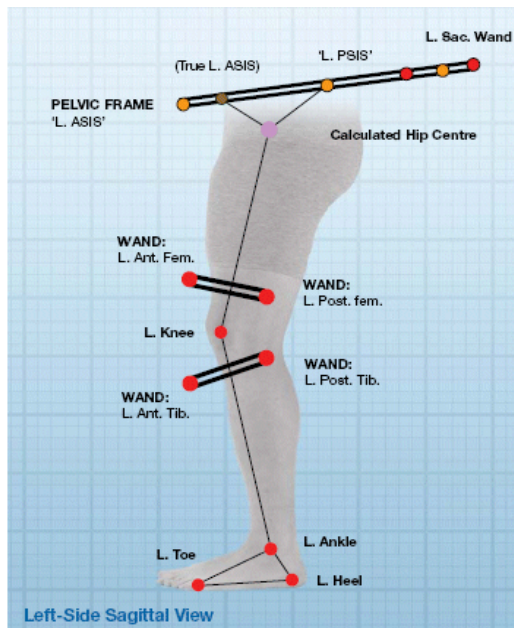
## Dataq DI-720-USB:

Dataq Instruments DI-720 USB ADC (Analogue-to-Digital Converter) can be used as the analogue and digital interface in Codamotion systems which do not include a Codamotion ActiveHub as the host computer. An Analogue (ADC) interface may be used to connect many type of analogue Force platforms. A digital interface can be used to provide synchronization input & output signals, acquisition triggers, and control signals to Kistler Force platforms.

The DI-720 provides 32-channels of single-sided Analogue input, 8 channels of Digital Input, and 8 channels of Digital Output. The DI-720 can be connected to any host PC with USB.

Part Ref #: DI-720-USB

## Codamotion Gait Wand Sets



The Codamotion Gait Wand Set helps to provide fast, accurate measurements of human gait, using a proven derivative of the Helen Hayes model as its basis.

Each Gait Wand Set includes a pelvic frame, thigh wands, shank wands, an ankle alignment jig, and – optionally – the required markers and marker drive boxes for feet and knees.

Each component can be charged and/or reprogrammed to alternative marker ID numbers to suit the user's customized marker protocol through an integral mini USB port (with USB lead supplied). Gait Wand Sets come in either adult or child sizes.

### Pelvic Frame

The pelvis is represented by markers on a frame which clamps around the pelvis. The sides of the frame lie in the plane of ASIS & PSIS pelvic landmarks. The physical alignment of the PSIS markers ensure a faithful representation of the pelvis segment and its hip-joint centres modelled according to Bell's method.

### Thigh and Shank Wands

Thigh and shank wands attached around the femur and tibia use a pair of markers to define the axial orientation of their host segment. These wands are a convenient solution for faithfully registering bone-pose whilst permitting rapid attachment to non-anatomical positions. Silicone rubber coated pads give high shear grip to skin.

### Placement of Foot & Knee Markers

The knee, ankle, heel, toe and hip markers (optional) are placed directly on the skin.

### Standard Wand

Part Ref#: GAIT 2.0- FP-A (with all markers)

Part Ref#: GAIT 2.0- WS-A (without foot and knee markers)

### Child Wand:

Part Ref#: GAIT 2.0- FP-C (with all markers)

Part Ref#: GAIT 2.0- WS-C (without foot and knee markers)

### Additional Accessories Available:

USB Programming device including software

Carry case with integral charging.



## New CodaSport Range



### A 3D Movement Analysis System that:

- Can be set up anywhere, even outdoors in bright light
- Requires no calibration
- Shows your results immediately
- Doesn't suffer from occlusions and never forget which marker is which
- Is so precise, you don't need to filter data or show 'average' results; just show what you actually measured!
- Can be broken down and rebuilt in a different place in a new configuration in ten minutes!

### It's Easier

- No Calibration
- No Filtering
- No waiting for results

### It's Smaller

- Ultra wide viewing angle brings sensor unit closer to the measurement space (no wasted space)
- Utilises the latest miniaturised battery technology for markers

### It's Faster

- No post processing - calculated data analysis in seconds
- Customised marker systems for rapid, precise placement

### It's Outdoor

- Don't confine your sport to the lab. Go where the action is...

Part Ref#: To be advised



## Cables & Connectors

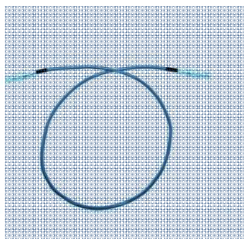
### CX1 combo cable:



A 10mm diameter cable which supplies low voltage DC power and control/data connections to a cx1 scanner unit. Connectors are high-density 26-way D (reversible: male at both ends). Length options: 5m, 10m, 15m, 20m, or custom (max 20m).

Part Ref #: DCCH-xx (where xx is length in metres)

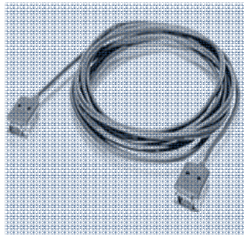
### External sync cable:



Connects two MiniHubs together.

Part Ref #: SCMPX-xx (where xx is length in metres)

### RS-422 data cable (3m or 5m):



A 5mm diameter cable which provides the high speed serial RS422 control/data connection between a MiniHub and the host computer (PC). Requires an RS422 serial (COM port) interface card in the host PC. Operates at a data rate of up to 5M-baud.

Part Ref #: RS232PH-03 (3m); RS232PH-05 (5m)

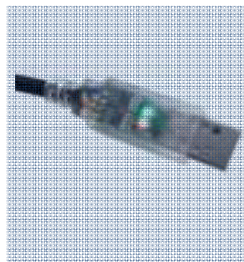
### RS-422 PCMCIA and PCI card:



The RS-422 PCMCIA Card interfaces up to two coda systems from a standard Laptop. The RS-422 card interfaces up to two coda systems from a desktop PC.

Part Ref #: RS422-DPL (PCMCIA Card for laptop)  
RS422-DPP (PCI card for desktop PC)

### Codamotion EasySync

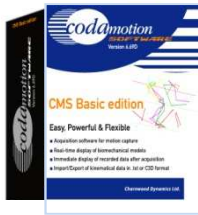


2 Port Industrial USB-RS422 serial adaptor including RS422 cables and USB lead

Part Ref #: USB-RS422-DUAL



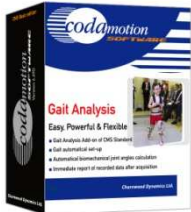
## Software & Software Options



### CMS “Basic”:

Basic software for acquisition, 3D visualization only & debugging. This software allows export in ASCII format only.

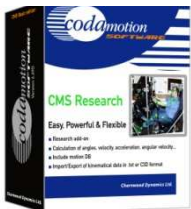
Part Ref #: CMSB



### CMS “Gait Analysis”:

Gait analysis add-on for basic software (Codamotion Gait setup + MotionDB).

Part Ref #: CMSGA



### CMS “Research”:

Research add-on for basic software. This add-on allows to visualize & edit graphics, calculate angles, moments, speed, accelerations, etc... This add-on allows the system to read & export C3D files.

Part Ref #: CMSR



### Codamotion SDK:

Software Development Kit for writing your own application on the Codamotion System. This software allows you to read and save continuous data streaming from the Codamotion capture system.

Part Ref #: CMSDK



### CMS “Force-Enabled”:

Force-plate enabled add-on for basic software (allows to record data, visualize, and work on them from external Force plate devices)

Part Ref #: CMSFE

### Further Options:

#### CMS “Analogue”:

General analogue enabled Codamotion basic software. This add-on allows to record data, visualize, and work on them from external devices including EMG).

Part Ref #: CMSA

#### Codamotion MATLAB-Toolbox:

MATLAB Toolbox for basic software. Allows data sharing directly with the Matlab software.

Part Ref #: CMATB

#### Visual 3D from C-motion:

Full biomechanical modelling capability, and visualisation of skeleton, muscles and real-time plug-in. Includes Codamotion files plugin for Visual3D.

Part Ref #: VISUAL3D

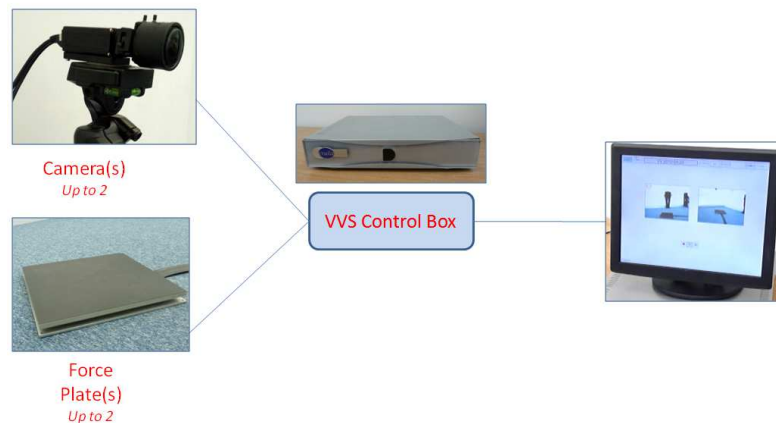
## Video Vector System and Components



The Codamotion Video Vector system is a simple solution that overlays video and force vector data in a single user-friendly system:

- Easy capture integrates high speed video cameras with just about any of the most popular strain gauge and piezoelectric force plates on the market.
- Easy analysis using Codamotion's latest Third Generation capture and analysis firmware and software platforms.
- Easy display on an integrated LCD touch screen that combines system control and display functions.

### Summary Specifications:



- A choice of one or two Basler high-speed cameras (see Options for details) capturing video at 100 frames per second.
- Inputs and support for up to two force plates (force plates not supplied as standard). Most industry standard piezoelectric and strain-gauge force platform are supported including:
  - Kistler models: 9281B, 9286, 9261, 9281C, 9281C2, 9287
  - AMTI models: BP400600, LG-6, OR6-7, BP900900, AccuGait, AccuSway
  - Bertec models: 4060, 6012
- Video Vector Processing & Display Unit with 38cm (15 inch) LCD touch screen providing:
  - Recording and playback support
  - Results analysis and report generation
  - Export feature in .avi format
  - Provision of data output in network shareable form

Codamotion's Video Vector System is supplied complete with video camera(s) in two configurations:

Part no: VS-01-02

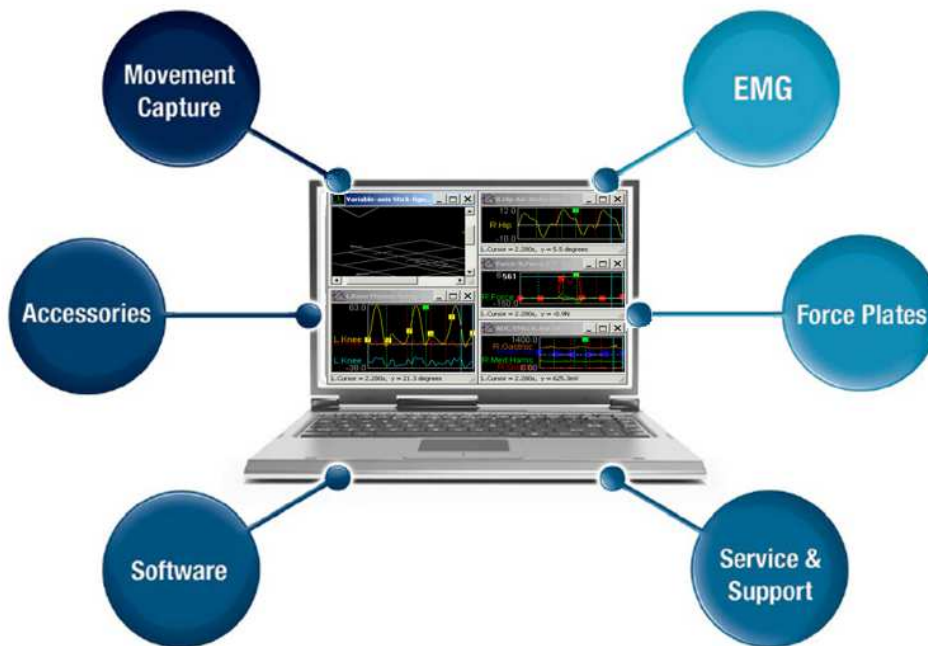
Twin camera system complete with 2 x Basler cameras, camera mounting plates, cables, and 1 x Processing & Display Unit.

Part no: VS-01-01

Single camera system complete with 1 x Basler camera, camera mounting plate, cables, and 1 x Processing & Display Unit.

## Specifying a Complete Solution

Every potential user faces unique challenges in specifying their system, relating to geography and logistics of the available space, application, and desired output format. At Codamotion, we aim to provide the complete solution to meet any challenge:



We've established a reputation for excellence and we maintain it with a technical team that's second to none. Our engineers have many years' experience of laboratory layout, project planning and experiment design, and they're there to help customers and potential customers at every stage.

Below we set out the basic stages to specifying your Codamotion System:

### ***Stage One: Do I need a Video Vector or CODA based system?***

Some applications require only video and force vector data, in which case the Video Vector System (see page 15) is a simple and effective solution. More commonly, movement analysis requires biomechanical data and 3D coordinate measurements that can only be obtained with a CODA system consisting of one or more CODA units (such as the standard cx1 unit – see page 6)

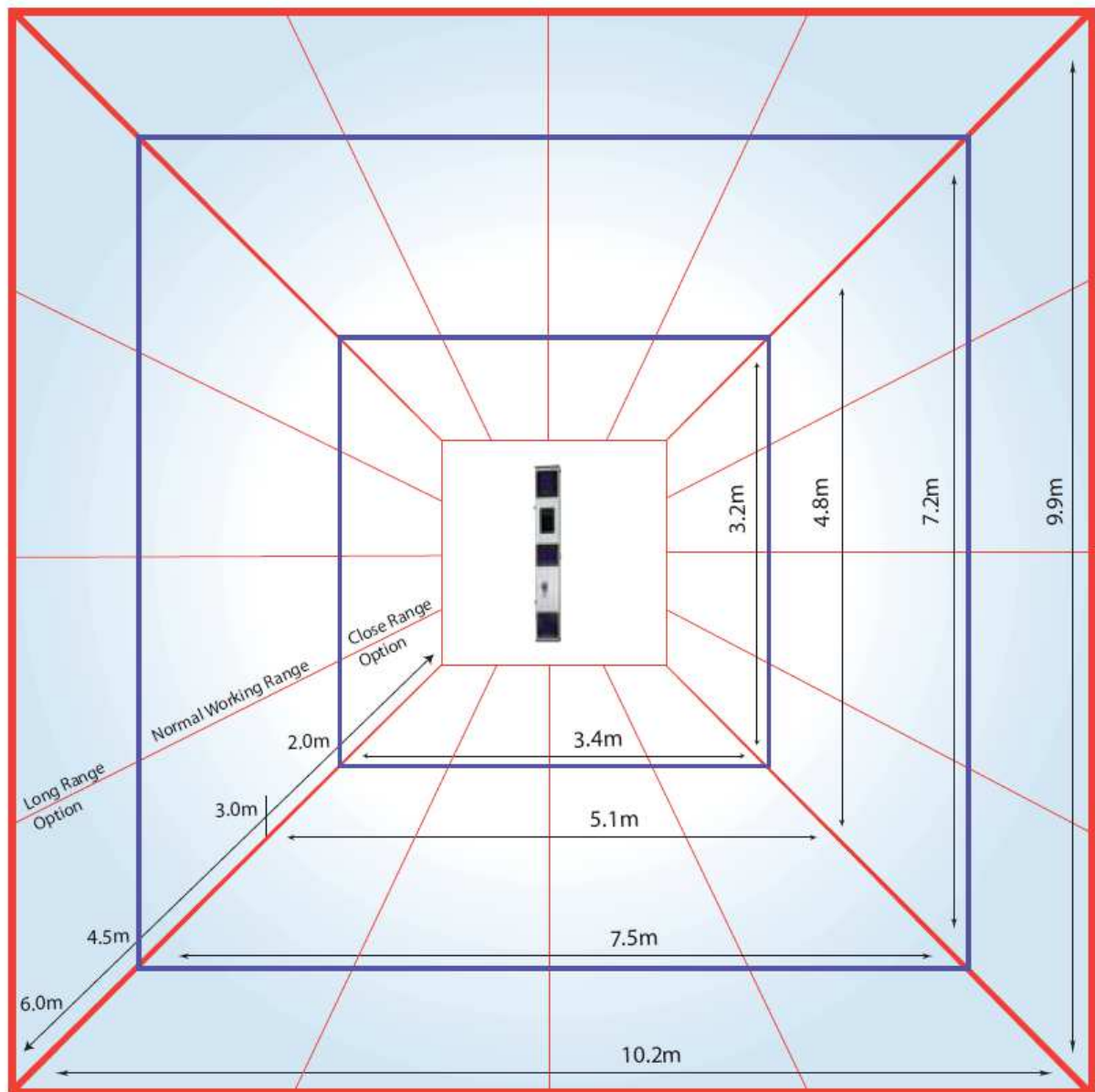
### ***Stage Two: How many CODA Units do I need?***

There are two main considerations that determine the number of CODA units required:

- a) The measurement volume required
- b) Visibility of the areas of interest

a) Measurement Volume.

The standard CODA unit – the cx1 – has a very large field of view. This means that it can make effective measurements in a very large volume. A single cx1 unit has a field of view approximately 1.6 x the distance from the unit, so for example, 2 metres away from the unit, it can 'see' any point in a plane 3.4 metres in width and 3.2 metres high. The area of the plane visible increases as the distance from the unit increases. For most practical purposes, accuracy starts to diminish beyond 4.5 metres away from the unit (specially calibrated versions of the cx1 unit for increased-accuracy measurements at nearer or farther distances are available.)



More than one cx1 unit can be used to increase the measurement volume where required. Codamotion engineers can help you design your application by using sophisticated visualisation techniques to show the effective measurement volume of a proposed layout within any shape of laboratory space, as for example in the following diagrams:

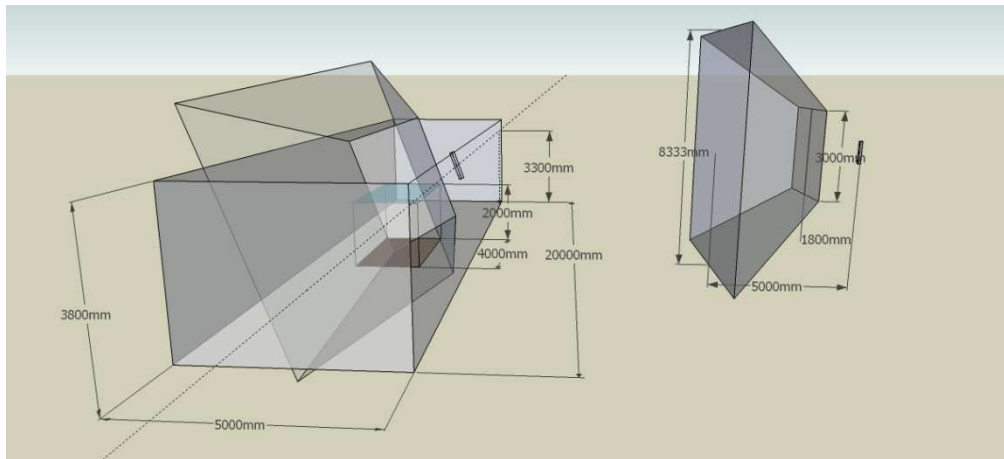


Figure 1

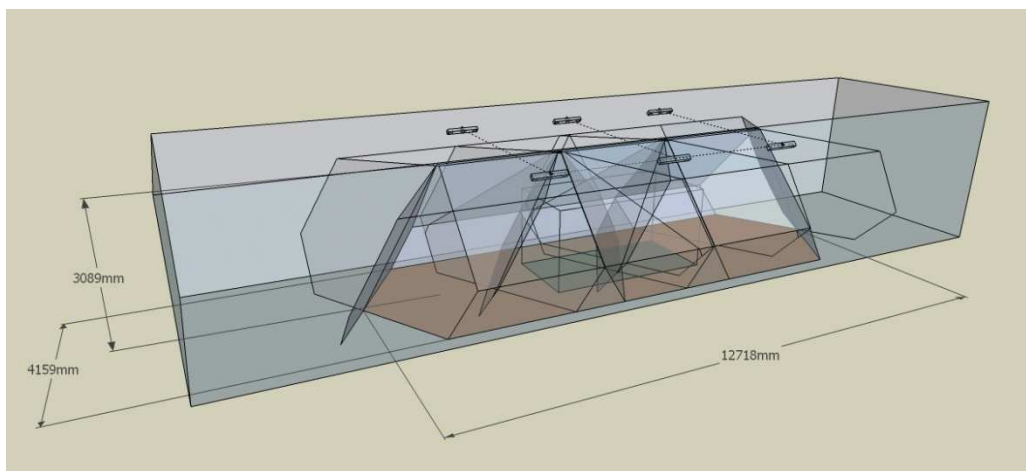


Figure 2

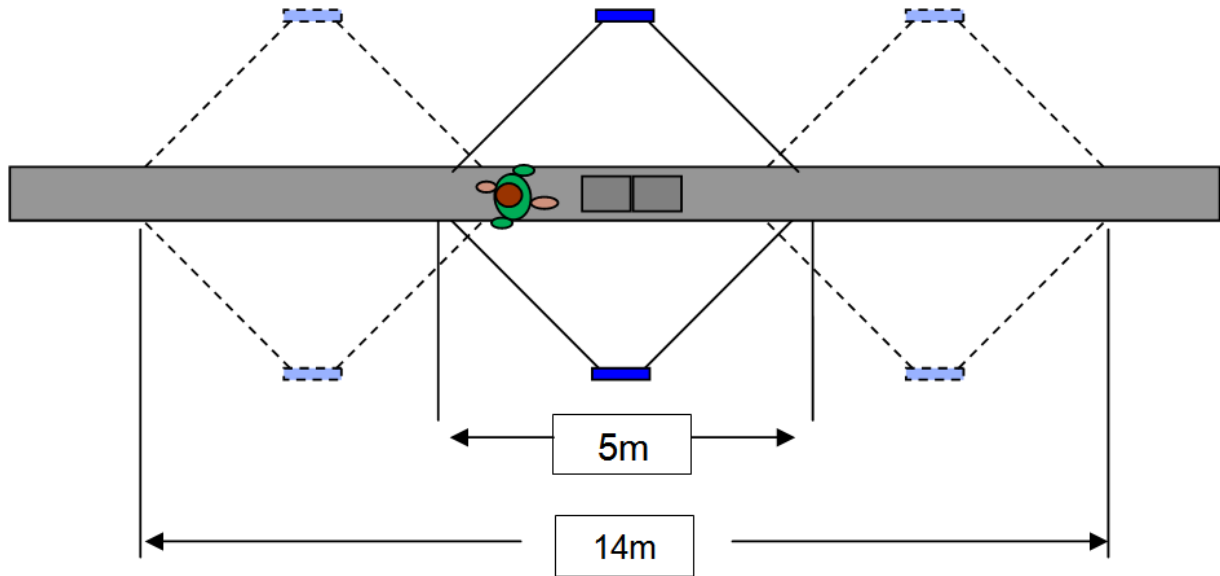
## b) Visibility

Visibility of the subject of interest has a significant impact on the number of units required. All optical 3D movement analysis systems rely on a line of sight to the marker or markers being measured. Anything obscuring the marker will prevent a measurement. To successfully view a scene in which some markers may be obscured from time to time may require additional CODA units to provide a view from a different angle.

However, unlike passive marker systems which rely on measurements taken from more than one spatially separated sensor (camera) to create a measurement, the Codamotion technology only requires a marker to be visible to one CODA to make a measurement. A simple rule of thumb is that if you can see a marker with your eyes when standing in a particular position then a CODA unit can make a 3D measurement from that position.

A common example of this can be found in gait applications. When considering human gait experiments, the user is interested in both legs and therefore needs to view both sides of the body during walking. Thus a common set up for gait experiments would see 2 cx1 units set opposite each other on either side of a central walkway, as in the diagram:





In this example, the 2 cx1 units are each placed approximately 3 metres from the central walkway, allowing measurement along approximately 5 metres of the walkway. This can be extended by adding further pairs of cx1 units as per the diagram (in this example, 6 cx1 units allows approximately 14 metres of walkway to be covered).

### ***Stage Three: Active Hub or Passive Hub?***

Data is collected and buffered inside each CODA unit and fed out through an RS422 interface. We use RS422 because it allows extended lengths of cabling to be used without signal degradation or data loss.

The RS422 cables are plugged into either an 'active' or a 'passive' hub.

An active hub is a rack mountable computer with the facility to receive analogue signals directly from force plates, EMG and any other third party equipment that might need to be integrated and synchronised with the CODA data.

A passive hub simply passes the data on into a control computer (usually a laptop), while providing power and synchronisation for the CODA units. The data transfer speed is slower than with an active hub. Although the data is buffered within the CODA units and therefore not lost, the speed limitation can lead to unwanted delays in applications where real time feedback is required. Since it is small, the passive hub is ideal for portable systems with one or two CODA units. Although force plate and EMG data can be integrated using a passive hub, this requires additional adaptors and cable connections (see table below)

Clients should choose whether to specify an active or passive hub on the basis of a number of criteria. A summary table of the features and benefits is set out in the table below:

	Using Passive Hub	Using Active Hub
No. of CODA Units supported:	1 to 2 CODA units	Favoured for 2 or more CODA units (up to 8 per active hub)
Control Computer:	Connects with laptop or PC through: <ul style="list-style-type: none"> <li>a) Easysync (Part ref#: USB-RS422-DUAL)</li> <li>b) PCI card with RS422 input (Part ref#: RS422-DPP)</li> <li>c) PCMCIA card with RS422 input (Part ref#: RS422-DPL)</li> </ul>	Integral within Active Hub
Data rates:	Option a) and c) sends data to control computer at 1Mbps	5 Mbps
Force Plates with analogue outputs:	Connected via Dataq DI 720 to USB port on laptop or PC (Part ref#: DI-720-USB)	Connected directly to active hub (filtering in active hub gives enhanced noise reduction and anti-aliasing)
Force Plates with serial outputs (e.g. AMIT Accugait)	Connected directly to RS232 input on PC/laptop (if available) or to USB port using adaptor (part ref: USB-SC)	Connected directly to RS232 input on active hub
EMG Systems with analogue output	Connected via Dataq DI 720 to USB port on laptop or PC (Part ref#: DI-720-USB)	Connected directly to active hub (filtering in active hub gives enhanced noise reduction and anti-aliasing.)
EMG Systems with digital/wireless outputs	Custom connection required depending on manufacturer (speak to your Codamotion sales representative).	Custom connection required depending on manufacturer (speak to your Codamotion sales representative).

## Appendix A - Component Summary Listing

Part Number	Description
	<b>CODA Units and Mountings</b>
CX1-800-1	The standard CODA cx1 unit
ACC-TPA	Tripod for cx1 including Coda support plate and locking screw
Coda-Brkt	Coda Mounting Bracket
	<b>CODA Cables and Accessories</b>
DCCH-05	Cx1 Combo Cable 5m
DCCH-10	Cx1 Combo Cable 10m
DCCH-15	Cx1 Combo Cable 15m
DCCH-20	Cx1 Combo Cable 20m
RS422PH-03	RS422 data cable 3m
RS422PH-05	RS422 data cable 5m
Carry-Case	Hardigg STORM case can hold either; 2 x cx1s, minihub,& cables, or 1 x cx1, tripod, minihub,& cables
	<b>Hubs and Hub Accessories</b>
MHMP	MiniHub (with up to two RS422 data cables)
MHMPES	MiniHub with External Strobe option (two connectors)
AHU-CP306-V	ActiveHub (with CP306-V processor card, HDD, CD-R/W), supplied with 1 x QUB, 1 x 32CADB and 1 x 32CFB fitted, and complete with monitor, keyboard and mouse.
QUB	Quad UART (for up to 4 cx1s)
32CADB	32-Channel A:D Board (cPCI)
32CFB	32-channel Analogue Filter board
AHU-PCIBUS	Active Hub PCI BUS Extension to allow for 64 synchronised analogue input channels
cPCI-PCMCIA	Compact PCI Dual Slot PCMCIA Adaptor
RS422-DPL	RS-422 PCMCIA card (Laptop)(dual port) (PM-121)
RS422-DPP	RS-422 PCI card (Desktop)(dual port)
USB-SC	USB-RS232 converter (for AMTI AccuGait)
USB-RS422-DUAL	2 Port Industrial USB-RS422 serial adaptor including RS422 cables and USB lead
USB-RS422-QUAD	4 Port Industrial USB-RS422 serial adaptor including RS422 cables and USB lead
DI-720-USB	Dataq DI-720 USB 32-channel ADC Analogue & Digital data acquisition unit.
ESUBP	External Strobe panel (two connectors) (also for wired-markers)
WSEC-500	Wired-strobe DriveBox extension cable
WSAU	Wired-strobe Adapter unit
ESU	External Strobe unit
ESUC-10	External Strobe cable (also for Wired-strobe Adapter unit) 10m
SCMPX-(Length)	External Sync. cable (variable length)
MON-LCD19	19" LCD monitor (normally included with Active Hub)
USB-KBOARD	USB Keyboard with 2 port USB Hub (normally included with Active Hub)
USB-MOUSE	USB/PS2 Scroll Mouse (normally included with Active Hub)
INDPC-RACK	Industrial PC with ISA slots for mpx30 systems, configured

Part Number	Description
	<b>Codamotion Markers &amp; Clusters</b>
XM-(Length)	Standard cx Marker
XMEXT-500	Marker Extension Cable 500mm
XMEXT-1220	Marker Extension Cable 1220mm
OMDBC	8-Marker Drive Box (with rechargeable batteries)
OMDBU	8-Marker Drive Box without batteries (for external power)
OMDBEPPB	8-Marker Drive Box modified for external power & wired-strobe
DMDB	2-Marker Drive Box
QMDB	4- Marker Drive Box
OMDBEPPB	External Battery Pack for 8-Marker DriveBoxes with Belt
CLSTR-AD	4-Marker Cluster (Standard Size) (Individually sold with elastic strap and USB lead)
CLSTR-CH	4-Marker Cluster (Small) (Individually sold with elastic strap and USB lead)
CLTSRUSB-500	Cluster Cable for Standard USB Port 500mm
EL195	Elasticated Cluster Strap with Adjusters 195mm
EL300	Elasticated Cluster Strap with Adjusters 300mm
CU-12D	Charger tray for 2-marker DriveBoxes
CU-6D+6O	Combo charger tray for 6x2-marker boxes + 6x8-marker boxes
CU-Cluster	Cluster Charger Unit and Carry Case (6 Clusters)
CU-7DEVICE	7 Port USB2 Powered Charging Hub including cables and PSU
CLSTR-PTR	Landmark 4 Marker Pointer
ACC-DSMT15	Double Sided Medical Tape - Narrow (12mm x 100m reel)
ACC-DSMT20	Double Sided Medical Tape - Wide (20mm x 100m reel)
FAJ-2.0	Floor Alignment Jig
	<b>Codamotion Gait Wand Sets</b>
GAIT2.0-WS-A	Integrated marker and drive box gait wand set for adults (Thigh & shank leg wands, ankle jig)
GAIT2.0-WS-C	Integrated marker and drive box gait wand set for children (Thigh & shank leg wands, ankle jig)
GAIT-PELVIC	Pelvic frame including sacral wand and belts
	<b>Software for CODA systems</b>
CMS-S	Basic acquisition (Codamotion Analysis for ASCII export only)
CMS-GA	Gait analysis add-on (Gait setup + MotionDB)
CMS-R	Research add-on (Codamotion Analysis for general use)
CMS-SDK	Software Development Kit
CMS-F	Force-plate enabled
CMS-A	General analogue enabled (including EMG)
CMS-FA	Force-plate enabled and general analogue enabled (including EMG)
CMS-MT	MATLAB Toolbox
CMS-RTNET	Real Time Codamotion NET Server
Visual-3D	Visual3D
	<b>Video Vector System</b>
VS-01-02	Twin camera video vector system
VS-01-01	Single camera video vector system



## Contact Information

**Codamotion** is a division of:

Charnwood Dynamics Ltd.  
Victoria Mills, Fowke Street,  
Rothley, Leicester, LE7 7PJ  
United Kingdom

**Tel:** +44 (0) 116 230 1060

**Fax:** +44 (0) 116 230 1857

**Email:** [info@codamotion.com](mailto:info@codamotion.com)

**Web:** [www.codamotion.com](http://www.codamotion.com)

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