Volume measurement systems
HEIDLER Strichcode GmbH with its head office in Wolfschlugen/Baden-Württemberg/Germany is a medium-sized software company specialized on planning and implementing individual shipping solutions. HEIDLER Strichcode offers all from a single source: A software individually tailored to customers, an appropriate hardware and matching consumable materials.

With its staff running up to twenty employees in the meantime the company founded in 1991 stays successfully competitive on the market since many years is one of the world’s leading suppliers of this software division. The customer base of HEIDLER Strichcode GmbH includes all companies with shipping volumes, which goods issue is organized by data processing technology. Logistic consulting and services through to freight cost/rate/management systems for package services, carriers and volume measurement systems complete the product portfolio of the company.

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Solutions for volume measurement

The technology of ToF cameras (time of flight) enables the automated optical volume measurement of pallets and other objects. Freight can be measured easily and quickly.

Easy use and quick processing increase performance in logistics!

- No manual volume measurement thanks to automated procedures
- Measurement errors are eliminated
- Volume measurement directly during shipping
- Exact data directly in the source system

Transport and complain costs, short-term delivery dates and limited loading areas determine transport costs of forwarding agencies and parcel services. In order to reduce those costs many processes have to be automated. Therefore it is important not only to determine the weight of transport goods but also their dimensions. The transport costs are calculated with a volume/weight factor and they are more cost-effectively and efficiently as a result.

Measuring pallets, packages and other transport objects uncomplicatedly with CartonCube, PalletCube, ProductCube, LightGridCube, MobileCube.

Height, width and length of a loaded pallet even with bulges can be calculated and transmitted within 2 seconds in the measuring range (e.g., with a forklift). The accuracy of the measurement can be limited up to 1.5 cm deviation by the three ToF cameras with PalletCube. Simultaneously during measurement 3 photos of all sides of the pallet can be taken and archived.

Besides the volume measurement even the weight of packages can determined (ProductCube) and the data can be integrated in the logistic process. Simultaneously a photo of the package can be taken and archived during volume and weight measurements.

Bulky transport goods can be measured by the MobileTape solution (max. 9x3x3m). The LightGridCube is measuring the dimensions in a flow. Also the weight of packages can be measured.

We are glad to supply more solutions for volume measurements, height determination and object detection on request.

Awards PalletCube

Each loading meter costs money - whether in transit or in the warehouse

Not only the weight is therefore important for the amount of the transport and storage and storage costs, but also the volume of a pallet, at this is the only way to use the available space efficiently. The newly developed PalletCube of HEIDLER Strichcode GmbH now supports companies with a quickly and cost-effective processing of their shipping, transport and warehouse logistics: The PalletCube easily and reliably determines volume and loading meter of each pallet even with asymmetric transport goods with bulges and overhanging loads. The system is nearly maintenance-free, because there are no movable parts.

The performance of such a measurement is automated and in seconds: Three special infrared cameras attached to the ceiling capture the surface and lateral surfaces of the pallet to be measured within one or two seconds. Photos of the pallet are also created simultaneously. Then the PalletCube software creates a three-dimensional depth image of the object. The determined dimensions data can also be transmitted with the CubeDaemon software via gateways to external host systems.

Third place in the Innovation Competition 2015 in Esslingen

The Heidler Strichcode GmbH has won the award for its new developed, measuring system PalletCube, to measure dimensions of pallets.

The funds totaling 40,000 euros prices on 10 November in a commemorative event with 38 competitors and other representatives from politics and business in the district Esslingen.

Award at the LogiMAT 2014

Price of the `Best Product´ for HEIDLER Strichcode Wolfschlugen, 25. 2.2014

The PalletCube convinces the jury of the LogiMAT: Using this product from the company HEIDLER Strichcode it takes just a few seconds to record the volume of a pallet. This year the company with its head office in Wolfschlugen (Baden-Württemberg) wins the coveted award for the `Best Product´ at the well-known logistic trade fair LogiMAT, which takes place in Stuttgart February 25th to 27th, 2014. The top-class jury, composed of representatives from science, economy and professional media, decided this year for an innovation, which automates the determination of even unregular pallet surfaces, extremely expensive, error-prone and time-consuming until now, and therefore speeds it up significantly.
Modern warehouse management and order picking require exact item master data. To improve quality in the process the accurate determination of the dimensions and weights for accurate freight billing and the actually required transport or storage space is essentially. The volume scale CartonCube is the ideal tool for non-contact detection of volume and weight of packages. The semi-automatic measurement of dimensions (length x width x height) and weight takes place in a matter of seconds. On the basis of the measurements, the correct packaging can be determined and warehouse and cargo plans can be organized. The semi-automatic measurement of dimensions (length x width x height) and weight takes place in a matter of seconds. On the basis of the measurements, the correct packaging can be determined and warehouse and cargo plans can be organized. The volume scale CartonCube is the ideal tool for non-contact detection of volume and weight of packages.

### Features
- Dimensioning - Weighing & Cubing system
- Platform size 600 x 600 mm, external dimensions 805 x 785 x 1015 mm
- Fast, non-contact dimensional detection of packages via Barcode rulers
- Frame made of powder-coated steel
- Low construction height for easy application of the packets
- Capacity: 30 kg, 60 kg and 150 kg
- Silent measuring of the goods
- Maintenance and wear-free execution of weighing
- Easy handling with ease of use
- Direct connection to existing PC systems via RS-232 or USB interface
- Easy process integration

### Item-Nos.

<table>
<thead>
<tr>
<th>Item-No.</th>
<th>Description</th>
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<tbody>
<tr>
<td>77150</td>
<td>CartonCube Barcode 600</td>
</tr>
<tr>
<td>71615</td>
<td>Interfaceable RS232 Scale – PC</td>
</tr>
<tr>
<td>22200</td>
<td>Laserscanner Honeywell Voyager</td>
</tr>
<tr>
<td>77902</td>
<td>Measuring stop for measurement of non-cube objects</td>
</tr>
<tr>
<td>77804</td>
<td>IDS-Kamera uEye XS, 5 MP, Autofocus, USB 2.0</td>
</tr>
</tbody>
</table>

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Modern warehouse management and order picking require exact item master data. To improve quality in the process the accurate determination of the dimensions and weights for accurate freight billing and the actually required transport or storage space is essentially. The volume scale CartonCube is the ideal tool for non-contact detection of volume and weight of packages. The semi-automatic measurement of dimensions (length x width x height) and weight takes place in a matter of seconds. On the basis of the measurements, the correct packaging can be determined and warehouse and cargo plans can be organized. The high-precision laser sensors which scan the rectangular boxes provide the non-contact dimension measurement. During the weighing then the corresponding volume weight is calculated. Via an interface connection the values determined can be adopted to the master data of the stock management system. An optional camera can record to the master data the respective product photo.

### Features
- Dimensioning - Weighing & Cubing system
- Platform size 600 x 600 mm, external dimensions 805 x 785 x 1015 mm
- Fast, non-contact dimensional detection of packages via Barcode rulers
- Frame made of powder-coated steel
- Low construction height for easy application of the packets
- Capacity: 30 kg, 60 kg and 150 kg
- Reliable weighing by three verifiable, laser-welded load cells
- Three high-quality laser distance sensors with laser class 1
- Silent measuring of the goods
- Maintenance and wear-free execution of weighing
- Height adjustable feet allow leveling of the system
- Easy handling with ease of use
- Direct connection to existing PC systems via RS-232 or USB interface
- Easy process integration

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<table>
<thead>
<tr>
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<tr>
<td>77152</td>
<td>CartonCube Laser 600</td>
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<tr>
<td>77900</td>
<td>mobile table</td>
</tr>
<tr>
<td>77901</td>
<td>battery system</td>
</tr>
<tr>
<td>77902</td>
<td>Measuring stop for measurement of non-cube objects</td>
</tr>
<tr>
<td>76155</td>
<td>Interfaceable RS232 scale – PC</td>
</tr>
<tr>
<td>77154</td>
<td>industrial terminal AL-Logie HMI 15 AL-Logie HMI 15&quot;, with windows 7</td>
</tr>
<tr>
<td>77804</td>
<td>IDS-Kamera uEye XS, 5 MP, Autofocus, USB 2.0</td>
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<tr>
<td>22200</td>
<td>Laserscanner Honeywell Voyager</td>
</tr>
</tbody>
</table>
Semiautomatic non contact volume and weight measurement - measure and weigh irregular-shaped items for distribution, packaging and warehousing applications. The included software visualizes weight and dimension data directly on your Windows computer.

**Features:**
- Combined measuring of volume and weight in one step
- Cubing Non-Rectangular / Irregular-Shaped Items
- Volume measurement with light grids
- The sturdy measuring gate can be moved easily by hand along a guidance
- Sturdy powder coated steel frame
- Glass plate (safety glass loadable up to 50 kg) with high shock and impact resistance
- Measuring Frame - Industrial grade light grid for simple, precise and quick measuring (Precision: 5 mm)
- Accurate weighing by four precise load cells
- Weighing capacity up to 50 kg
- Maintenance free design
- Maximum object size: 800 x 640 x 640 mm (LxWxH)
- Intuitive software for simple visualization and volume determination
- Easy integration into different ERP systems and shipping software
- Incl. Windows 7 industrial PC with touchscreen, USB and Ethernet ports

**Item-No.** | **Description**
--- | ---
77160 | ProductCube LightGrid
77900 | Mobile table ProductCube LightGrid
77901 | Battery system ProductCube LightGrid
22200 | Laserscanner Honeywell Voyager
77800 | Camera Basler dart for Product photo, USB 3.0, 5 MP
77802 | Basler camera ace LAN, 14 MP
77803 | Canon EOS 1300D 18 MP, reflex, autofocus
76153 | reference scale 6kg, readability 1g

The ProductCube can be used for volume and weight measurements of packages and other products. The package is pushed on the scales table then the delivery note number will be scanned then. After having recorded the delivery note number the user initiates the measurement process, while the ProductCube determines weight and volume data automatically including a digital images recording within a few seconds and transmits it to the shipping or host system.

**Features:**
- ToF Camera
- Measuring table with base plate and 2
- Limity stops ( Table size 800 x 600mm x 700 )
- Calibrated weighing 150kg
- Accuracy ± 20g / 50g
- display unit
- IP - camera for product photo
- Ethernet connection
- Alibi memory
- Communication software for HVS32 shipping system for detecting volume and weight data.
- Measurement tolerances about 0,5-1,5cm
- Smallest object about 10 x 10 x 5cm
- Largest object max. l = 80cm, w = 60cm, h = 70cm
- wall mounting

Optionally, other communication transfer possible. (ODBC, TCP / IP, SAP, RFC ...)

It should be noted that the objects to be measured have no reflective surfaces.

**Item-No.** | **Description**
--- | ---
77105 | ProductCube 800 ToF Camera
77200 | CubeUI
77201 | CubeDaemon

The ProductCube can be used for volume and weight measurements of packages and other products. The package is pushed on the scales table then the delivery note number will be scanned then. After having recorded the delivery note number the user initiates the measurement process, while the ProductCube determines weight and volume data automatically including a digital images recording within a few seconds and transmits it to the shipping or host system.
Volume measuring frame with scales for sizing, volume and weight measurement in logistics

**Features**
- Weighing and measuring in a flow
- Non-contact volume detection by volume light grid
- Quick and accurate determination of weight
- Determines dimension and weight data for the calculation of volume weight
- Individual construction of dimensioning and weighing system according to customer
- Maximum volume measuring range: 1 x 1 x 1.5 m in 5mm steps
- Capacity: up to 100 kg at 20 g division
- Optional roller conveyor or belt conveyor
- Adjustable flow rate
- Direct data transfer to a PC with visualization of the object
- Optimize the shipping and packaging planning

The modern freight registration includes the optimization of storage and shipping. Information about weight and dimensions of packages gets more important due to rising costs for transport fuels. The volume and weight measuring system LightGridCube is used to determine dimensions and weights of packages. A high-quality light curtain system provides an exact parameterization. This scans the packages and determines during weighing the associated volume and resulting volume weight. The measured data (Volume - dimensional weight) simplify the transportation planning and improve spatial use of transport vehicles. At the same time packaging, warehouse, and distribution planning can be optimized. Through a modular system different sizes are easy to implement. The collected data can be transferred to a host system.

<table>
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<tr>
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<tbody>
<tr>
<td>77130</td>
<td>LightGridCube without weight measuring</td>
</tr>
<tr>
<td>77131</td>
<td>LightGridCube with weight measuring</td>
</tr>
</tbody>
</table>

The HeightCalculator is a system which is able to measure pallets with a multitude of different surfaces and calculating the volume of the pallet. This volume can then be recalculated into a SEU (Standard Equivalent Unit). The HeightCalculator will display the length, width, height, volume, and three pictures of the pallet. This information can possibly be used by companies to control the flow of returned crates. When in the reverse chain one standard stacking height is used, then the number of SEU’s on a pallet can function as indirect reference. Ultimately, every correct counting can be recalculated to SEU, generating a indisputable connection between final identification and counting and intermediate indirect references. Tolerances of the carrier pallet have no influence on the measurement when using the vision sensor.

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<tr>
<td>77000</td>
<td>HeightCalculator</td>
</tr>
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</table>

**Features:**
- 1 x ToF Camera
- Interface for HVS32 transport system
- Camera attachment
- Communication software for HVS32 transport system
- Interface matching

The HeightCalculator is a system which is able to measure pallets with a multitude of different surfaces and calculating the volume of the pallet. This volume can then be recalculated into a SEU (Standard Equivalent Unit). The HeightCalculator will display the length, width, height, volume, and three pictures of the pallet. This information can possibly be used by companies to control the flow of returned crates. When in the reverse chain one standard stacking height is used, then the number of SEU’s on a pallet can function as indirect reference. Ultimately, every correct counting can be recalculated to SEU, generating a indisputable connection between final identification and counting and intermediate indirect references. Tolerances of the carrier pallet have no influence on the measurement when using the vision sensor.

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<tr>
<td>77850</td>
<td>Vision Sensor (Pallet tolerances)</td>
</tr>
<tr>
<td>77800</td>
<td>Camera Basler dart for product photo</td>
</tr>
<tr>
<td>77200</td>
<td>CubeUI</td>
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<tr>
<td>77201</td>
<td>CubeDaemon</td>
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</table>
The functionalities of this innovative product have now been extended by the measurement of carrier pallet heights, where height differences are detected by a vision sensor and therefore can be compensated. Thanks to this solution it is not urgently required to place the pallet within the measurement range.

**Features:**

- Operating conditions: +10 °C to 50 °C
- Dimensions / weight: \( L = 4.64 \text{m (isosceles triangle)}, H = 0.22 \text{m} / 50 \text{kg} \)
- Suspension point: max. 4.2m
- Measuring range: Maximum diameter 2.8 m at suspension point = 4.2m (Depending on camera gradient and suspension point)
- Measurement method: Three ToF Cameras
- Measuring tolerance: 0.5cm - 2.0cm
- Measurement restrictions: Direct sunlight, glass, black foil
- Object size: min. 15cm x 15cm x 15cm
- Max. (Depending on suspension, Measurement range and height)
- Example: suspension point = 4.2m
  Max. Measuring range = ø2.8m
  Max. Measuring height = 2.8m at a camera angle of 32°
- IP cameras: Three Full HD IP cameras with infrared LEDs for transmission of JPG snapshots
- Connectors: LAN (RJ45), WLAN 802.11 b / g / n
- Communications: TCP / IP, SOAP, REST, (others on request)
- Voltage: 230V / AC
- Supernatants on the measurement object are smaller than 2cm in length, width, height are ignored.
- Measuring time: Depending on the number of measurements, per measurement 200ms plus communication and reaction time is about 1s. (Standard 7 measurements per measurement approx 2s).

**Item-No. Description**

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<tbody>
<tr>
<td>77001</td>
<td>PalletCube</td>
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<tr>
<td>77050</td>
<td>Liftertruck 6100 with weight measurement function, WLAN interface for weight measurement</td>
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<tr>
<td>77850</td>
<td>Vision Sensor for pallet tolerance</td>
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<tr>
<td>77200</td>
<td>CubeUI</td>
</tr>
<tr>
<td>77201</td>
<td>CubeDaemon</td>
</tr>
<tr>
<td>77030</td>
<td>Frame on stilts</td>
</tr>
</tbody>
</table>

... in action
The mobile application supports most of the Android devices, can be operated very easily and requires no expensive volume measurement system thanks to a special measuring tape. Objects up to a length of 9 meters and a width and height of 3 meters can be measured with this electronic measuring tape. The measurement data are quickly transmitted to the mobile Android device by a Bluetooth connection. The transmitted sizes can be additionally transmitted to a web service with a photo or be locally saved on the device.

**The Mobile Tape consists of the following components:**
- CubeTape (digital measuring tape) with integrated 1D barcode scanner
- Android Tablet / Smartphone
- App license

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<tr>
<td>77180</td>
<td>MobileTape</td>
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<tr>
<td>77855</td>
<td>CubeTape</td>
</tr>
<tr>
<td>23209</td>
<td>Tablet / Smartphone (on request)</td>
</tr>
<tr>
<td>77203</td>
<td>License per unit</td>
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</tbody>
</table>

The MobileCube is an ideal solution for mobile operation of, volume measuring for example, PalletCube and weight from a forklift. The user-friendly and easy to operate app runs on Android Tablet PC or another-capable terminal and it is connected via web service interface with the PalletCube and the HVS32. Thus it is possible without problems to record a delivery note from the forklift, and to determine volume and weight and to print the created label immediately on WiFi label printer installed on the forklift.

**Features:**
- Mobile and flexible
- Weight and volume determination
- Delivery note entry by barcode scanning
- ID entry by barcode scanning
- Request of image data
- Label printing
- Individual processes
- Modular

**Options:**
- Compatible Android device

**Requirements:** HVS32 shipping system and PalletCube

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<tr>
<td>77185</td>
<td>MobileCube</td>
</tr>
<tr>
<td>22400</td>
<td>Z710 Premium Android device</td>
</tr>
<tr>
<td>77204</td>
<td>App License per unit</td>
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</table>

**Software for volume measurement systems**

The calibratable volume data management "Heidler AlibiDB" is suitable for manual inputs and for the fully automated process flow. The data are saved in an encrypted database for years for detection and statistical purposes, protected against manipulation. Various interfaces to ERP and volume measurement systems enable a diverse and efficient use of the software. Thanks to the automated feedback the further processed data can be transferred immediately to a shipping system or directly to a carrier.

**Features:**
- User-friendly
- Available calibrated and uncalibrated
- Compatible with Cube volume measurement systems
- Interface to ERP systems
- Search and filter options
- Additional export data in CSV format
- For manual and fully automated measurement process
- Secured against manipulation of data

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<tr>
<td>77202</td>
<td>Alibi DB</td>
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</table>

**CaptureTool**

The CaptureTool captures photos within seconds with as many high-resolution cameras, small whole large objects. By documenting the delivery you always will have the opportunity to demonstrate in what state, the consignment was before dispatch. Thanks to the high-resolution images you can see not only the ignorance integrity but also the correct marking / labeling.

**Features:**
- High-resolution images up to 5MP (higher solution on request)
- Simultaneous image recording with one or several cameras
- Ease of use
- Installation on your own server or client
- Various export possibilities of data

**Options:**
- Barcode scanner wired / wireless
The service provides the interface between the host systems and our volume measurement systems. Requests are received and reported back via the protocols TCP/IP, SOAP and REST. A installation is able to respond to any number of measurement systems and to answer on different protocols.

Together with the mobile application ‘MobileCube’ they offer the possibility to process the measurement data without a determined packaging station.

**Features:**
- For pallets, packages and other objects
- Easy handling
- Data export as CSV, MET or XML
- Image data export

We offer a wide range of interfaces to pre-systems.

**Interfaces to pre-systems**
Depending on the type of application, an interface is available for a unidirectional or bidirectional communication.

When the measurement process is triggered externally via an input data transmission (request) and the output data transmission (output) is send after the measurement was taken, we are speaking about bidirectional communication. This communication type is used for the automated systems.

In case of manual and semi-automated measuring systems, only the unidirectional communication is available. Once the measuring process has been completed, the measurement data is directly reported to the pre-system.

Among other, the following interfaces are available:

**File (CSV, SDF, XML)**
Via the file export interface, the different file formats CSV, SDF or XML can be written to the defined directory. The order and selection of the data fields is freely configurable and thus easy to change and expand.

**ODBC**
This interface offers the possibility to communicate with a ODBC compatible database. Using an unique ID a record can be updated or added to a previously defined table in the database. The selection of the data fields to update / write, is freely configurable.

**SAP (RFC, IDoc)**
These interfaces are used for a direct data exchange with an SAP system. By communicating via Idoc (Intermediate Document), the SAP is sending an IDoc via a TCP/IP based SAP-RFC protocol (Remote Function Call). The result data is also sent back as an IDoc via RFC.

By communicating with RFC function modules, the modules are called by SAP via the SM59. The data is exchanged via the import parameters (data input) and export parameter (data output) or the tables in the RFC function.

In both cases, thanks to free configurable field mappings we’re supporting all IDoc formats and RFC modules.

**SOAP**
With this interface, we provide a SOAP webservice with a predefined WSDL. The WSDL contains definitions for all functions and corresponding fields for the request and response.

This WSDL can be easily integrated by the pre-system. A request can be made by simple calling the corresponding function with the input parameters. The response is returned as a result of the function call.

and other ...
Technical questionnaire LightGridCube

Technical questionnaire Volume Systems

Planning a volume measuring system

General

Application: non-dire.
Number of involved systems:
Volume: Year of installation:
Vendor:

Objects

Objects of the objects:
- Length of the objects:
- Width of the objects:
- Height of the objects:
- Optical characteristics of the object surface:

Contact

Type of the conveyor system:
- Effective conveyer width (inside):
- Load capacity:
- Objects guided on one side:
- Constant conveying speed:
- Min. gap between objects:

Weight

- Weighting:
- Max. package weight:
- Min. package weight:
- Regulation of the weight:

Other

- Interface:
- Power supply:
- Temperature range:
- Others, additional remarks:

Completed by:
Company:
Date:

Planning a volume measuring system

General

Application: non-dire.
Number of involved systems:
Volume: Year of installation:
Vendor:

Objects

Objects of the objects:
- Length of the objects:
- Width of the objects:
- Height of the objects:
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Scann and request a questionnaire.