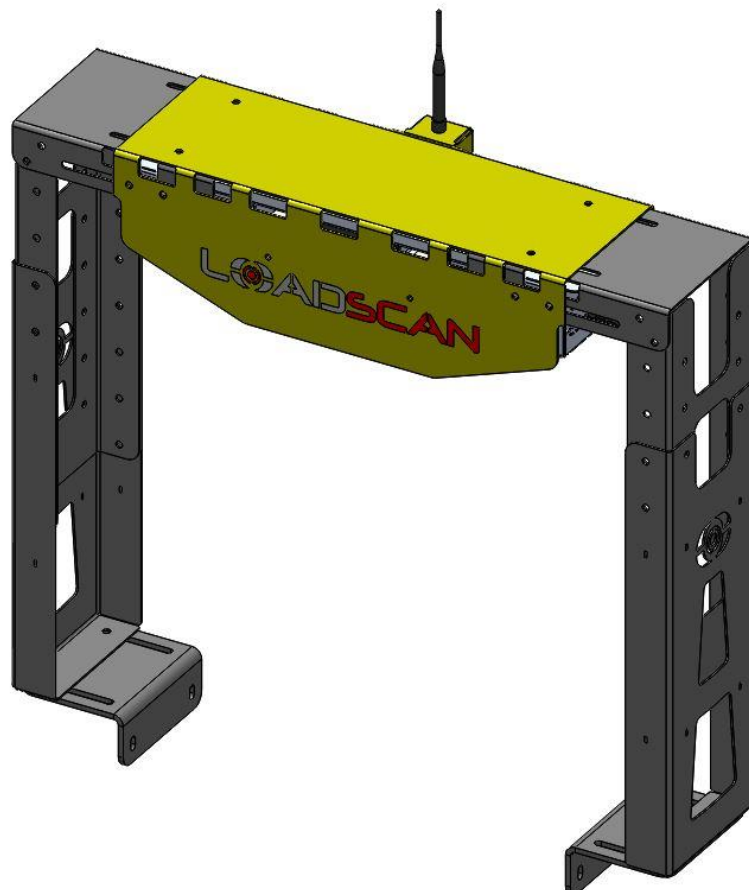




Conveyor Volume Scanner

CVS-1 Series

Operator Manual



SAFETY PRECAUTIONS

- This equipment must be installed and operated by suitably authorized and qualified personnel only.
- Please follow appropriate safety procedures and when installing this equipment.
- Ensure all external cables leading to this equipment are adequately protected and correctly installed according to local regulatory requirements.
- Ensure that this equipment is installed correctly as detailed in this manual.

GENERAL PRECAUTIONS/NOTICES

- Except where approved by LoadScan Ltd or its agents, do not attempt to service, disassemble, repair or modify any CVS components yourself. *Unauthorized repairs or modifications may void the manufacturer's warranty.*
- LoadScan Ltd shall not be responsible for any damage attributable to incorrect installation, operation or handling of this equipment or improper operating environments which are not suitable for this equipment.
- *This device may include a wireless (WiFi) RF transmitter module that operates in either the 2.4 GHz or 5 GHz license-free radio spectrum. The FCC ID for this transmitter module, if fitted, can be found on the main information label for this device.*
- *This device contains a Class I (eye-safe) laser component. The FDA ID for this component can be found on the main information label for this device.*

Disclaimer

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1 Installation

- *This equipment must be installed by suitably qualified personnel with electrical installation and Information Technology (IT) knowledge and experience.*
- *Please follow electrical and safety regulations and site requirements when installing this equipment.*
- *Do not open the CVS scan head unit.*

1.1 Preparation

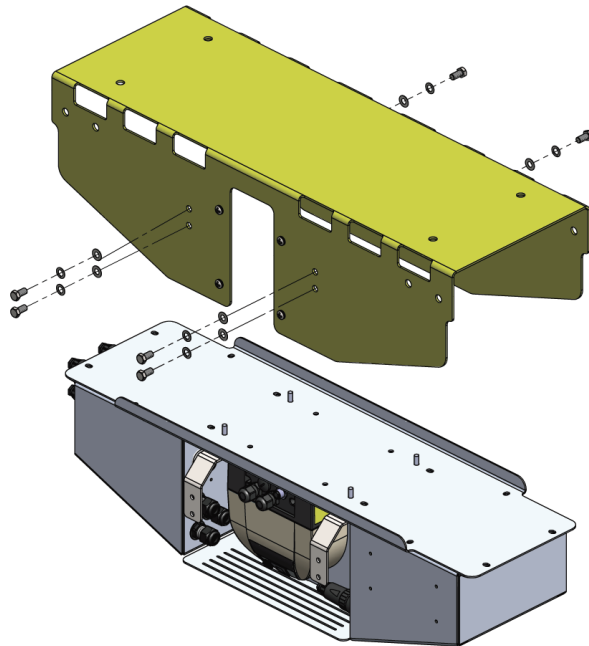
1.1.1 Check system components

Check all supplied components before proceeding with installation.

	CVS scan head (installed inside frame center section for shipping)		Speed sensor mounting bracket and sensor target bolt/bracket
	Mounting frame pieces and fasteners		DC power cable, 15m (49.2 ft)
	Wireless antenna and cable cover		Blank (sealed) cable connector for I/O wiring and waterproof RJ-45 wired Ethernet sealing gland (fitted to CVS scan head for sealing)
	Inductive speed sensor		Speed sensor cable, 5m (16.4 ft)
	[OPTIONAL] Speed sensor extension cable (length as ordered)		[OPTIONAL] Waterproof flange-mount 90-305 VAC power supply with 5m (16.4 ft) DC power cable

1.1.2 Prepare the frame

Remove the CVS scan head from the frame center section and place aside in a safe location with laser window facing downwards for protection.

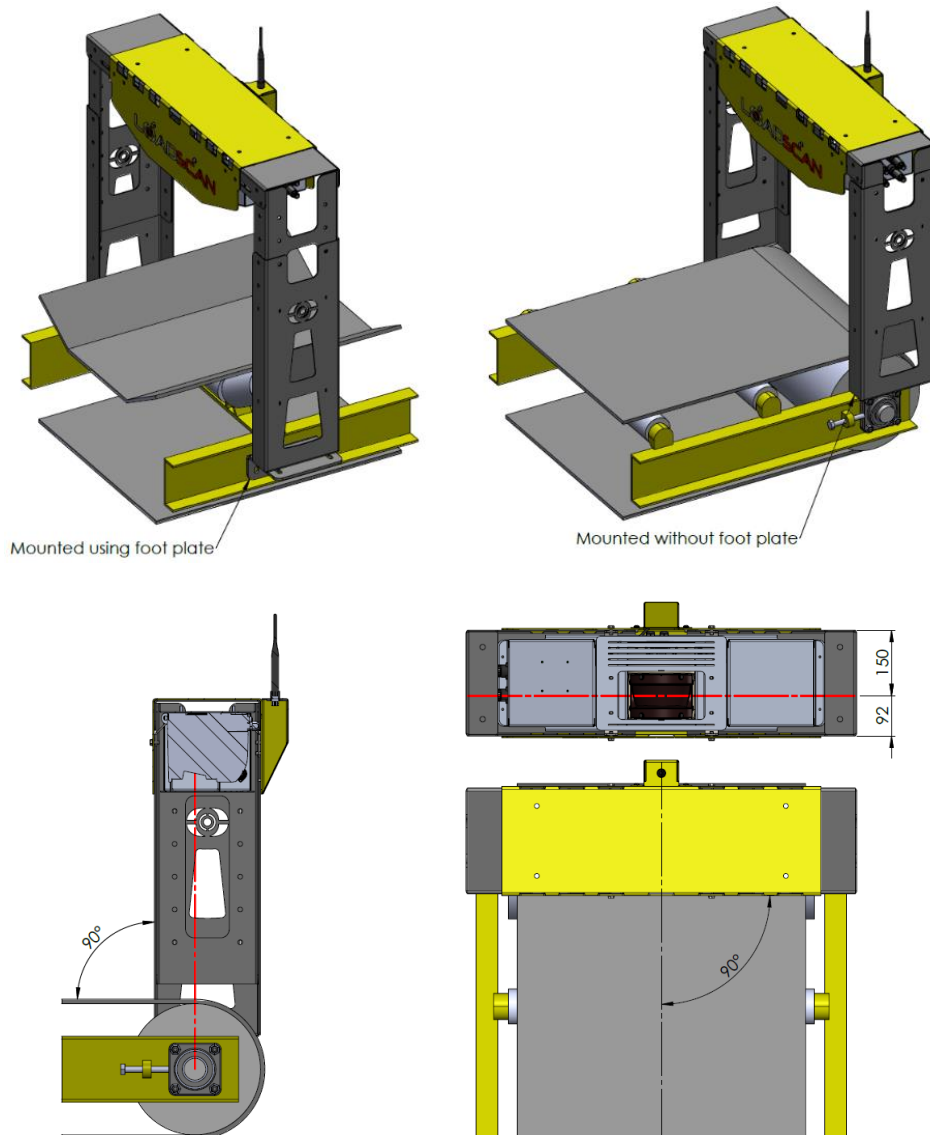


1.2 Mounting the CVS

Refer to separate *LoadScan CVS Frame Assembly Drawings* document for detailed assembly drawings.

1.2.1 Mount the frame

- Laser window as close as possible to drive roller or support roller (laser beam over roller)
- Frame centered over belt and securely fastened to conveyor support structure
- Frame perpendicular to belt angle of elevation and travel direction
- Area between belt and frame clear

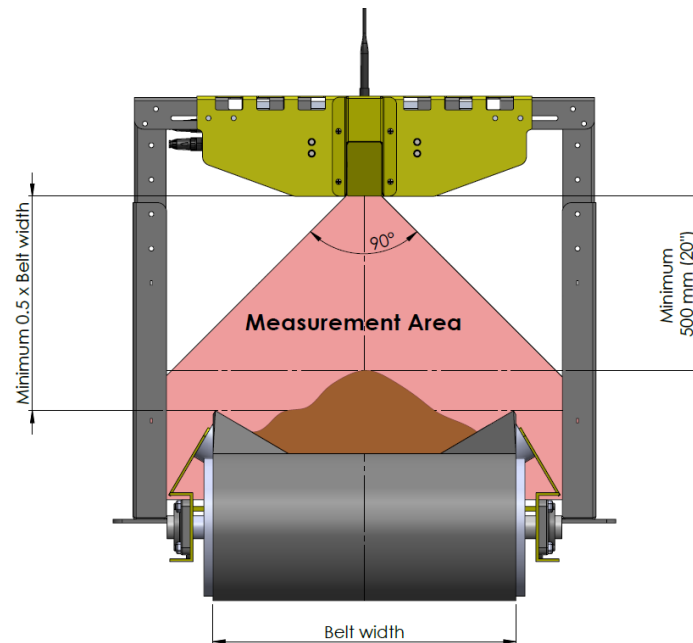


Notes

- The preferred location is over the drive roller. If this not possible then the CVS may be mounted over a support roller/idler set. In this case, ensure that the belt is firmly in contact with the roller(s), even when there is no material on the belt.
- Avoid mounting location subject to high vibration or shock.
- The frame may be installed in either orientation across the belt. Note how this affects the relative position of the laser window and the location of the cable connectors before selecting mounting location and orientation.
- See **5 Technical Specifications** for frame dimensional drawings with extension ranges for each size.

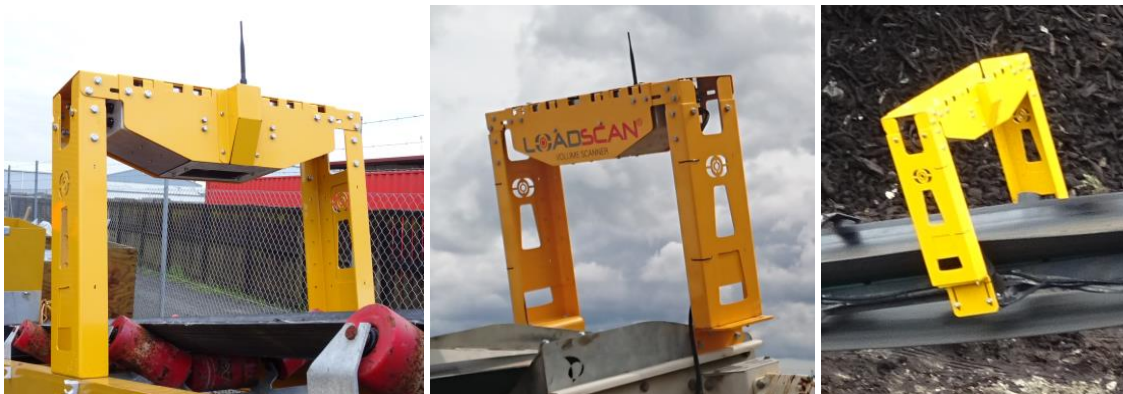
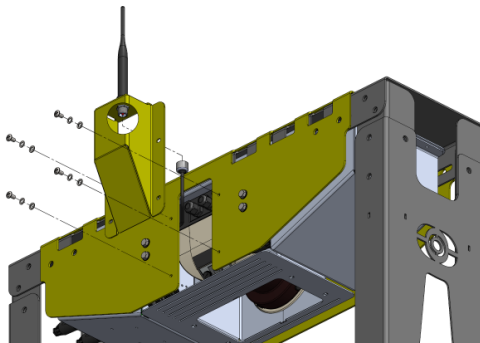
1.2.2 Set frame height

- Minimum 500 mm (20") from highest point on loaded belt to bottom edge of frame (under typical maximum load conditions)
- Minimum 0.5 x belt width above belt edges to bottom edge of frame
- Extra safety margin for clearance of large rocks/lumps if required



1.2.3 Install CVS scan head

Insert the CVS scan head into the frame center section and replace all screws removed in step 1. Attach the antenna cable to the wireless antenna connector inside the cable cover and affix the cable cover to the frame center piece with the screws provided.



1.3 Installing the Speed Sensor

Refer to separate **LoadScan CVS Speed Sensor Mounting Drawings** document for detailed mounting drawings.

1.3.1 Mount sensor and target

The inductive speed sensor allows measurement of belt speed by detecting revolutions of the belt drive roller. Mount the sensor and target by one of the methods illustrated in the images below or examples in **LoadScan CVS Speed Sensor Mounting Drawings**. A suitable steel detection target must be affixed to the drive roller and aligned with the inductive sensor so that the target passes the sensor once per revolution of the roller, with a gap of 3-5 mm (0.12-0.2") between the sensor and target when the target passes the sensor.



Notes

- The CVS is supplied with an aluminium mounting bracket that can be folded, cut and drilled as required to mount the inductive speed sensor.
- The CVS is supplied with a steel bolt (sensor target) fitted to an aluminium bracket that can be folded, cut and drilled for center-mounting on the drive roller shaft.
- Standard supplied speed sensor cable is 5 m. An extension is required if the sensor needs to be more than 5 m from the CVS unit.
- If the belt has a known fixed speed, then a speed sensor is optional. However, a speed sensor is suggested unless the belt speed is regulated by a motor speed controller and this does not vary under different loading conditions or electric or hydraulic power conditions.

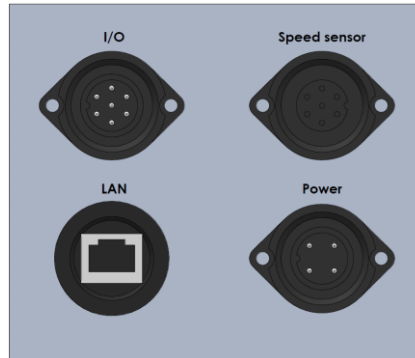
1.3.2 Measure drive roller circumference

Accurately measure and record the circumference of the drive roller (in mm) for speed calibration.



1.4 Electrical Connections

1.4.1 Cable connectors



Notes

- To maintain weather-proof sealing of the CVS, please leave sealing caps on all unused cable connectors.
- Ensure all external cables leading to this equipment are adequately protected and correctly installed according to local regulatory requirements.

1.4.2 Power

Power input is via an Amphenol Ecomate® (C16-1 series) 4-pin male panel connector. The CVS is supplied with a mating cable connector with 15m (49.2') of power cable for external power wiring. Power requirements are 9-36VDC, 3A max. @ 24 VDC with heater off, 6A max. @ 24 VDC with heater on (at start-up below 5°C/41°F).

Pin	Signal	Description
1	+VDC	Positive DC supply input
2	- VDC	Negative DC supply input
3		Unused
4 (Earth)	Earth	Earth connection to chassis

If the CVS has been supplied with optional CVS-1PS external waterproof power-supply, then install this according to local electrical regulations and site requirements. The CVS-1PS can power the CVS from a 90-305 VAC power source. This can be installed directly on the frame of the conveyor if an electrical cabinet is not available and is supplied with 5m (16.4') of DC power cable and connector for direct connection to the CVS. Waterproof connectors must be used for AC input wiring for external mounting.



1.4.3 Speed sensor

Speed sensor input is via an Amphenol Ecomate® (C16-1 series) 7-pin female panel connector. The CVS is supplied with a 5m speed sensor cable. Connect the cable between the inductive speed sensor and the CVS scan head.

Pin	Signal	Description
1	+24VDC OUT	Sensor power supply positive output
2	-24VDC OUT	Sensor power supply negative output
3	PULSE +	Sensor pulse signal positive input
4	Reserved	Special function input
5	PULSE -	Sensor pulse signal negative input
6		Unused
7 (Earth)	SHIELD	Cable Shield (chassis Earth)

1.4.4 Wired Ethernet

Optional wired Ethernet connection is provided by a waterproof RJ-45 panel jack. This is supplied with a mating cable gland for sealing standard RJ-45 terminated Ethernet cable.

1.4.5 Switching inputs/outputs

One isolated digital switching input (future use) and three isolated digital switching outputs (status signals) are provided via an Amphenol Ecomate® (C16-1 series) 7-pin male panel connector. The CVS is supplied with a mating cable connector for external digital input/output wiring. Status output signals can optionally switch external signals to control belt start/stop, status indicator lights, PLC control signals and so on.

Pin	Signal	Description
1	INPUT 1 +	Digital input 1 positive input
2	INPUT 1 -	Digital input 1 negative input
3	OUTPUT COMMON +	Digital output common positive input
4	OUTPUT 1 +	Digital output 1 switched positive output
5	OUTPUT 2 +	Digital output 2 switched positive output
6	OUTPUT 3 +	Digital output 3 switched positive output
7 (Earth)		Unused

Switching Input (future use)

Input Voltage Range: 3 ~ 32 VDC

Maximum Input Current: 18 mA

Isolation Voltage: 4000 Vrms

Switching Outputs (status signals)

Load Voltage range: 3 ~ 32 VDC

Load Current Range: 0.02 ~ 2.5A

Isolation Voltage: 4000 Vrms

See **2.2.3 Assign system status signals to switching outputs** for status signal mapping options.

2 Configuration

2.1 Connecting to the CVS

The CVS has built-in wireless (WiFi) and wired Ethernet network connectivity. The wireless radio can be configured to use either 2.4 GHz or 5 GHz bands and supports hotspot or client modes. It can also be disabled. Wired Ethernet provides optional Gigabit LAN connectivity. Initial connection can be either wireless or wired and networking settings can be modified from the CVS user interface.

2.1.1 Wireless Connection

By default, the CVS is configured as a wireless hotspot with the following settings:

Frequency: 2.4 GHz
SSID: LoadScan-CVS
Password: 2BAD4FAB4A
CVS URL: https://172.16.1.1

Connect to the hotspot with any device with built-in 2.4 GHz WiFi and a web-browser. Once wireless connection is established, the CVS user interface can be opened in a web browser at the URL specified.

Wireless networking configuration can be modified in the **Wireless** section of the **System configuration** page accessible from the CVS user interface menu. Please connect via wired Ethernet to modify wireless configuration. Do not connect wired and wireless interfaces on the same network subnet.

2.1.2 Wired Ethernet Connection

By default, the CVS wired Ethernet (LAN) port is configured with a static IP address as follows:

IP Address: 192.168.0.1
Subnet mask: 255.255.255.0
CVS URL: https://192.168.0.1

Connect via Ethernet cable from any device with a built-in Ethernet port and a web browser. Set the IP address of your device to a different static IP address on the 192.168.0.0 subnet. Once network connection has been established, the CVS user interface can be opened in a web browser at the URL specified.

Wired Ethernet configuration can be modified in the **Wired Ethernet** section of the **System configuration** page accessible from the CVS user Interface menu. Note that if a static or automatic (DHCP) **Router (Gateway)** is set then then wired Ethernet will be used for all Wide Area Network (WAN) connections, otherwise wireless will be used. Do not connect wired and wireless interfaces on the same network subnet.

2.1.3 Login to the CVS user interface


When the CVS user interface is opened in a web browser for the first time, a login page will be displayed. Login with the following credentials:

Login: admin
Password: loadscan

After logging in as admin, login options and passwords can be changed in the **Authentication** section of the **System configuration** page accessible from the CVS user Interface menu.

2.2 System Settings

Measurement engine parameters, time and date settings, networking settings and other configuration options can be accessed from the **System configuration** page accessible from the CVS user Interface menu (admin login required).

Please review all settings and modify to suit your region, application and networking environment. Additional information is available for some configuration parameters by tapping/hovering on the  icon.

2.2.1 Set belt speed measurement method and calibration

The belt speed measurement method and calibration are set in the **Measurement engine** section of the **System configuration** page.

If an inductive speed sensor has been fitted:

Use fixed belt speed	No
Encoder resolution	Circumference of the drive roller in mm, as measured in 1.3.2

If an inductive speed sensor has not been fitted and the belt speed is a known constant value:

Use fixed belt speed	Yes
Fixed speed	Known belt speed in selected speed measurement unit

2.2.2 Select measurement units

The desired measurement units for volume, weight and belt speed are set in the **Measurement engine** section of the **System configuration** page. Note that changing measurement units will take effect immediately and all historical measurement data will be reported in the currently configured units.

2.2.3 Assign system status signals to switching outputs

The following system status signals can optionally drive the three digital switching outputs available to control belt start/stop, visual status indicator lights, PLC control signals and so on.

- **Idle:** measurement mode is operational, but no job is active (unassigned measurement only).
- **Job active:** a job is running. This signal can be used, for example, to start the belt automatically when a job is started and stop the belt when the job is stopped.
- **Job target reached:** target volume/weight for the active job has been reached and the job is still running. This signal can be used, for example, to control a visual indicator to advise the operator that the job is ready to be manually stopped.
- **Black belt:** belt is running (belt speed greater than zero) but there is no material on the belt.
- **Belt stopped:** belt speed = 0.
- **Warning:** non-fatal error condition requiring operator intervention is active.
- **Error:** a fatal error condition requiring operator intervention is active (measurement stopped).

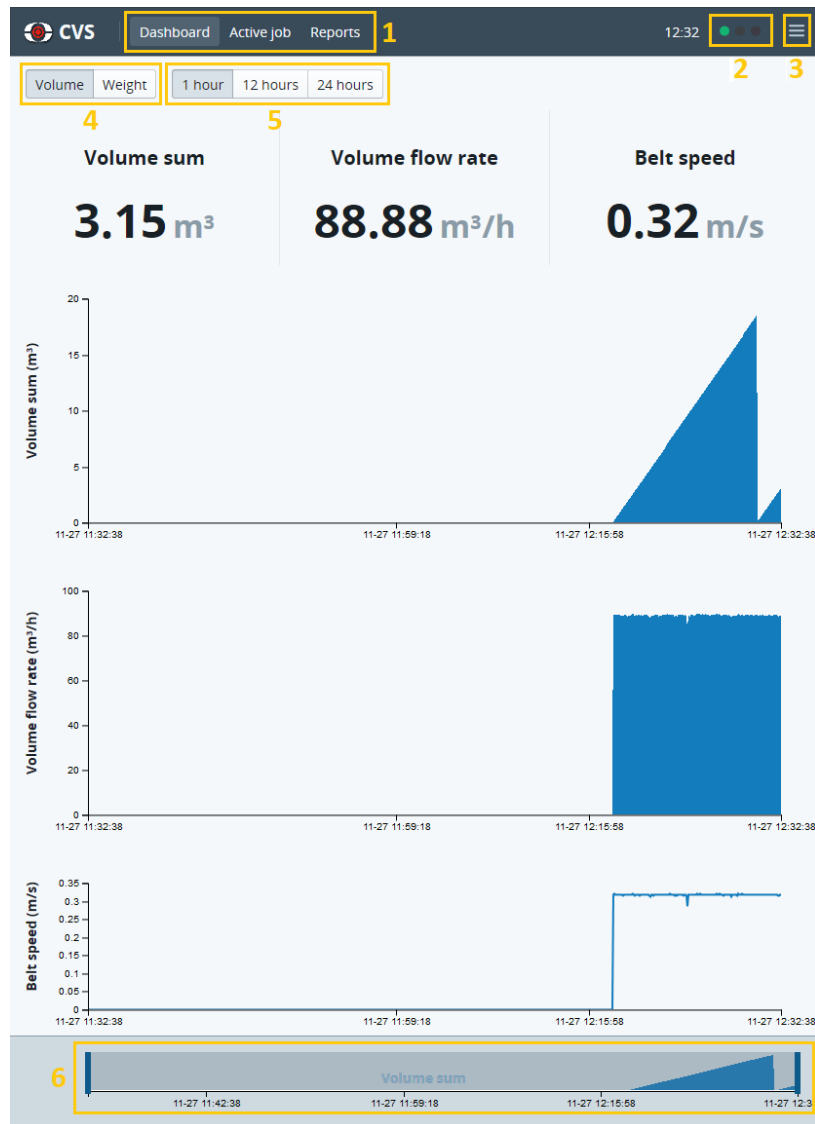
Assign status signals to switching digital outputs in the **System status outputs** section of the **System configuration** page. Multiple outputs can be assigned to one status signal. An output will be active when any of the assigned status signals are set.

See **1.4.5 Switching inputs/outputs** for output wiring and signal requirements.

3 Basic Operation

3.1 The CVS User Interface

The CVS user interface is designed for use with any modern web-browser on desktop, tablet or mobile device. Menu buttons [1] in the header bar provide access to the primary user interface pages and additional functionality is available from the drop-down menu [3]. In mobile mode the menu buttons are incorporated into the drop-down menu.



3.1.1 Login levels

Select **Login** or **Logout** from the drop-down menu. Available logins are:

- **user** – allows full operation of the CVS, including jobs, materials and customer management and setting the zero profile but does not allow system configuration changes.
- **admin** – allows full operation of the CVS and access to system configuration settings.

The default password for both login levels is “loadscan”. Passwords can be changed from the **Authentication** section of the **System configuration** page (when logged in as admin) and optionally the CVS can be set to login automatically by setting the **Default user level**.

3.1.2 Status indicators

Color status lights on the header bar [2] indicate the current system status. Click on the status lights for more detailed status information and any active warning or error messages.

3.1.3 The Dashboard

The Dashboard provides an overview of current measurements and plots of recent measurement history over selectable 1, 12 or 24-hour periods [5]. The default period is 1-hour. A slider bar at the bottom of the page [6] allows the plots to be zoomed and panned within the selected period and additional information can be viewed by tapping/hovering over the plots.

3.1.4 Switching between volume and weight modes

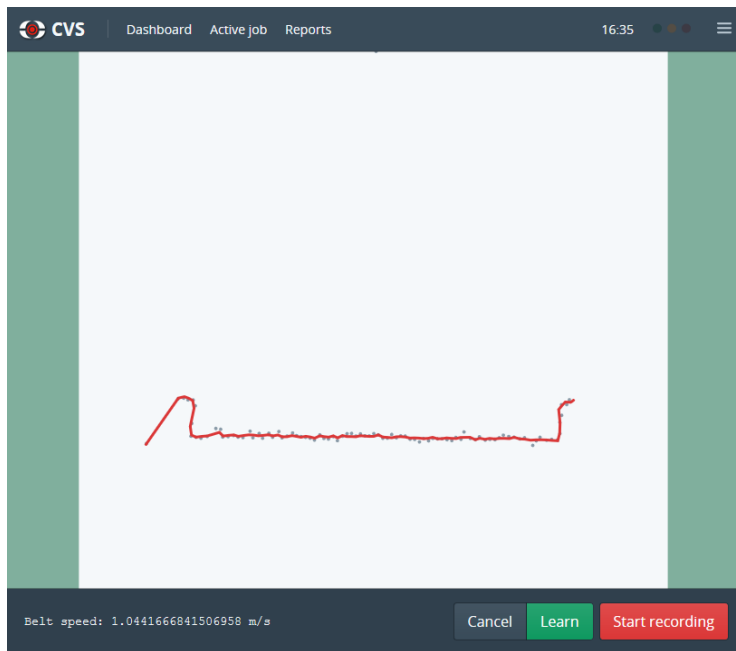
When the system is in volume mode, current and historical measurement data is displayed in the configured volume units. When the system is in weight mode, current and historical measurement data is displayed in the configured mass units. **Volume** and **Weight** buttons [4] appear on the Dashboard, Active job and Jobs pages to toggle between display modes. Material density values need to be specified for weight measurement mode (see **3.5 Measurement Calibration**).

3.2 Setting the Zero Profile

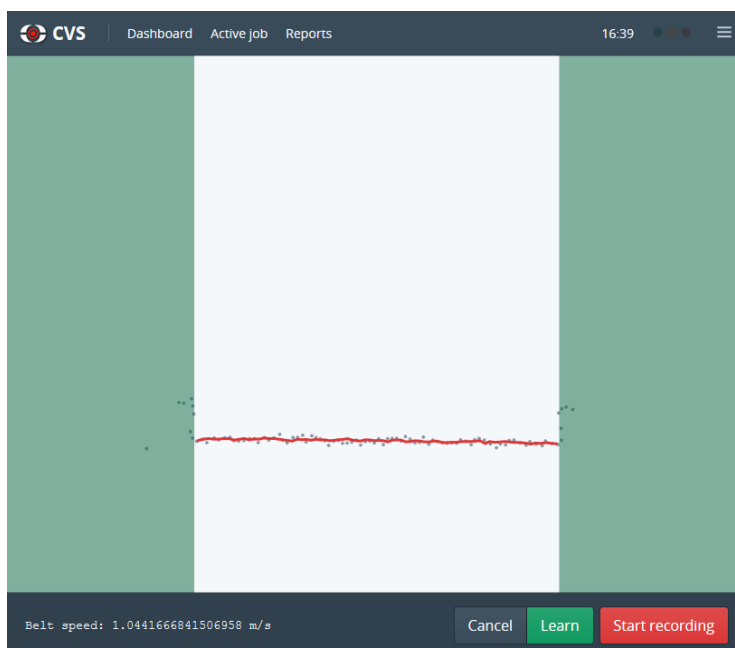
The Zero Profile is the cross-section profile of the empty belt. This must be learned by the CVS before measurement can occur and must be updated whenever the belt profile changes or shifts significantly.

Follow the steps below to update the zero profile:

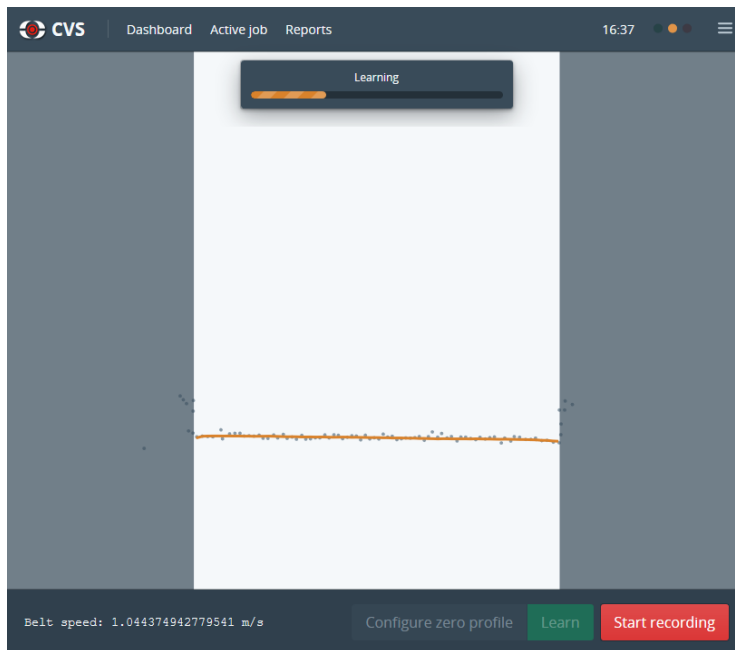
1. Login to the CVS as admin.
2. Make sure the belt is running (at typical speed) and completely empty.
3. Open the **Belt scan profile** page. This page displays a view of the current zero profile and the live measured belt scan profile.
4. Push the **Configure zero profile** button. The zero profile will change from green to red and start updating with the live profile.



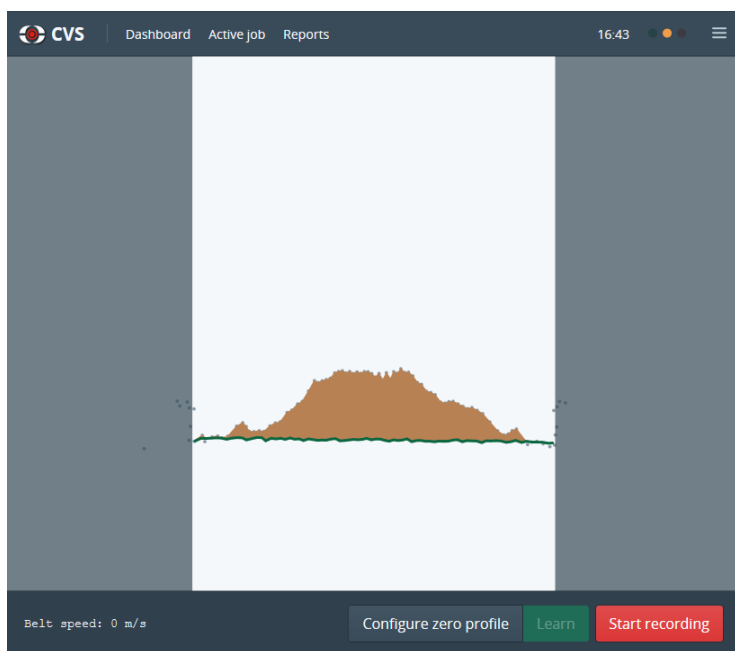
5. Move the left and right slider bars so that only the desired measurement range is visible between them. This range should extend from the left edge of the belt to the right edge of the belt or to the extremes of possible load on the belt.



6. Push the **Learn** button. The zero profile will change from red to orange and start learning the new zero profile. This will take about 30 seconds.



7. The new zero profile will display in green and idle measurement mode will re-start automatically.



3.3 Measuring with Jobs

A job can be created for each batch of product run over the belt and a material and customer associated with the job.

3.3.1 Create a new job

Follow the steps below to create a new job.

1. Open the **Active Job** page.
2. Push the **[+]** button next to the job selector to open the **Create New Job** dialog.
3. Enter a unique name for the job in the **Name** field.
4. Optionally enter a description for the job in the **Description** field.
5. If you do not want to use the default material, then change the **Material** selection.
6. Optionally select a **Customer** for the job.
7. Optionally select a target volume or weight for the job in the **Target measurement** field. Select the desired units for this value. If you want the job to stop automatically when the target is reached, set **Stop on target reached** to **Yes**.
8. Push the **Create new job** button to create the job.

The screenshot shows the 'Create New Job' dialog box within the CVS software interface. The dialog has a title bar with 'CVS' and navigation links for 'Dashboard', 'Active job', and 'Reports'. The main title is 'Create New Job'. Below the title, there are two tabs: 'Volume' and 'Weight'. The form contains several fields: 'Name' (required, with an asterisk) containing 'Mulch test 1'; 'Description' containing 'A test run'; 'Material' (required, with an asterisk) containing 'Mulch 1'; and 'Customer' containing 'In-house'. At the bottom, there is a 'Target measurement' section with a numeric input field containing '12.0' and a unit dropdown menu set to 'm³'. To the right of this is a 'Stop on target reached' section with two radio buttons: 'Yes' and 'No', with 'No' selected. At the very bottom are two buttons: 'Cancel' and 'Create new job'.

Notes

- *Materials can be managed from the **Materials** page and the default material set in the **Measurement engine** section of the **System configuration** page (admin login required).*
- *Customers can be managed from the **Customers** page (admin login required).*
- *If a job is set to stop on target reached, this will automatically stop the job running on the CVS but will not stop material running over the conveyor belt. If you want to start and stop the belt automatically when jobs are run or turn on a 'target reached' indicator/alarm, this can be achieved by assigning system status signals to digital switching outputs that are wired to control external signals. See **2.2.3 Assign system status signals to switching outputs** for available system status signals.*

3.3.2 Run a job

Follow the steps below to run a job.

1. Open the **Active Job** page.
2. Select the job to run in the job selector. Only jobs that have not yet run and jobs that have been reset or resumed are displayed on the list. Once selected, the job details will be loaded.
3. Push the **Run job** button to start the job.
4. If **Stop on target reached** has been set, then the job will stop automatically when the target measurement is reached. Otherwise, push the **Stop** button when the job is complete. When a job is stopped, a summary report is displayed, and the CVS automatically returns to idle measurement state.

The screenshot shows the CVS 'Active job' page for a job named 'Mulch test 1'. The page has a dark header with the CVS logo and navigation links for 'Dashboard', 'Active job', and 'Reports'. The time '17:36' is displayed in the top right. Below the header, there are tabs for 'Volume' and 'Weight'. The main section displays the job name 'Job: Mulch test 1' in large bold text. Below this, there are three rows of data: 'Volume' at 1.36 m³, 'Volume flow rate' at 74.76 m³/h, and 'Belt speed' at 0.17 m/s. To the right of these values is a dropdown menu showing 'Mulch test 1' with a green '+' button. Below the data rows, there are two buttons: a green 'Run job' button and a red 'Stop' button, followed by a menu icon. To the right of these buttons is a form with several fields: 'Description' (A test run), 'Start time' (2018-11-05 17:34:33), 'Material' (Mulch 1), 'Customer' (Matt), 'Target volume' (12 m³), and 'Stop on target reached' (No).

3.3.3 Resume or Reset a job

A job that was previously run can be resumed or reset. Resume allows the job to be run again, and new measurement added to the previously measured total. Reset allows the job to run again and resets the total to zero. A job can be resumed or reset from the **Jobs** page. Once a job has been reset or resumed, it will re-appear on the job selection list on the Active Job page.

3.3.4 Manage jobs

To view job details and perform additional job management such as creating multiple new jobs or editing a job, open the **Jobs** page. It is possible to re-name a job, edit the description and change the material and customer, even if the job has already been run.

Note that changing the material will affect reported measurements for the job.

3.4 Measuring without Jobs

The CVS records measurement data in idle state even if no job is active. If the same material is always run over the belt and it is not necessary to record customers, job details or target measurements, then the CVS can be used without jobs for simple production monitoring.

3.4.1 Reset volume/weight total

When measuring in idle state, the cumulative total volume/weight increases until idle state is exited, or the total is manually reset. To manually reset the total to zero, push the **Reset** button on the **Dashboard**. This button is only available when idle measurement state is active.

3.4.2 Unassigned jobs

Every time the CVS enters idle state the volume/weight total is reset to zero, a new 'unassigned job' with an automatically generated name is created and any measurement data is logged against this job. The default material is used for unassigned jobs and no customer is assigned. An unassigned job continues until idle measurement state is exited, such as when a user-defined job is started, or the CVS is powered-down.

Notes

- *Idle state measurement logged against unassigned jobs shows on measurement history plots and downloaded period report data, but unassigned jobs are not included in job reports.*
- *Materials can be managed from the **Materials** page and the default material set in the **Measurement engine** section of the **System configuration** page (admin login required).*

3.4.3 Claim an unassigned job

An unassigned job can be claimed as a user-defined job so that it appears on job reports, can be resumed, reset and so on. Follow the steps below to claim an unassigned job.

1. Open the **Jobs** page.
2. Push the **Show unassigned** button to show unassigned jobs in the jobs table
3. Identify the unassigned job by the job start time.
4. Select the unassigned job to open the job editing page.
5. Enter a suitable **Name** for the job and set the **Description**, **Material** and **Customer** as desired.
Note that changing the material will affect reported measurements for the job.
6. Click the **Update job** button to save the changes. This job will now be reported as a standard job.

3.5 Measurement Calibration

The CVS measures the volume created by the visible surface of the loose bulk material as it sits on the belt. The level of compression of the material under its own weight (compaction of lower layers) may differ significantly on the belt and in the output stockpile, bin or destination environment. This may result in a reproduceable difference between the volume measured on the belt and volume of the same material in a bin or stockpile. This also affects the material density used for reporting weight measurement.

To correct this systematic measurement error, each material has a specified **volume correction factor** and the measured volume reported by the CVS is a 'corrected volume', where:

$$\text{Corrected volume} = \text{raw volume} \times \text{volume correction factor}$$

Each material also has a specified **density** value. This value is the mass-to-volume ratio of the material, where volume is the corrected volume. The measured weight reported by the CVS is:

$$\text{Weight} = \text{corrected volume} \times \text{density}$$

3.5.1 Perform test measurements

It is suggested to perform several test measurements for each material, to determine the necessary calibration factors. A large rectangular bin or truck body with even sides should be used to create a test sample of known volume and weight. Follow the steps below to perform a test measurement.

1. Accurately measure the internal dimensions of the bin to get average values for length (**L**), width (**W**) and depth (**D**).
2. Calculate the volume capacity of the bin as **V1 = L x W x D**
3. If you wish to use the CVS in weight measurement mode, then measure and record the empty weight of the bin as **W1**.
4. Create a job for the test measurement and select the correct material. Ensure that the volume correction factor and density for the material are at default values of 1.
5. Run the job and begin feeding the conveyor output into the test bin.
6. When the bin is close to full, level the load across the top of the bin so that the bin is filled to level across the entire top surface. Do not stand on or compress the material.
7. Stop the job and record the raw measured volume as **V2**.
8. If required, measure and record the loaded weight of the bin as **W2**.
9. Compute the volume correction factor and density for the material as below:

$$\text{Volume correction factor} = V1/V2$$

$$\text{Density} = (W2-W1)/V1$$

Notes

- *At least three test measurements should be performed for each product to get suitable averages.*
- *Material calibration factors can be edited by selecting the material on the **Materials** page. Density must be computed and entered in the specified units (based on the configured weight and volume units).*
- *The same material may have different properties depending on time of year/moisture content. In this case it is suggested to create multiple versions of the same material. For example, 'summer' and 'winter' or 'wet' and 'dry' variants with different calibration factors.*
- *Editing calibration factors will not affect reported measurements for completed jobs.*

3.6 Reporting

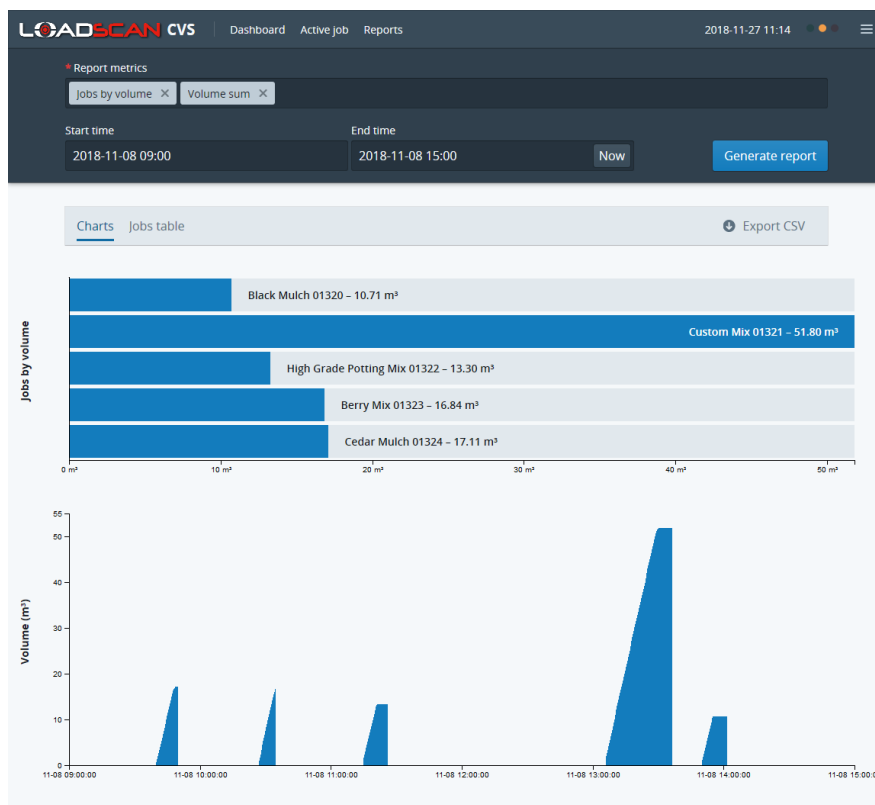
The CVS can display job summary information and plot measured parameters for a selected time period. Job details and logged measurement data for the period can also be downloaded in CSV file format for export to other applications such as Microsoft® Excel.

3.6.1 Generate a period report

Follow the steps below to generate a period report.

1. Open the **Reports** page.
2. Select one or more **Report metrics** to include in the output.
3. Enter **Start time** and **End time** for the desired report period.
4. Push the **Generate Report** button.

The selected metrics will display as charts in the **Charts** tab. Additional information can be viewed by tapping/hovering over the charts. If jobs report(s) have been included, then job details will be available in table form in a **Jobs table** tab. The raw logged job information and measurement data for the period can be downloaded in CSV text-file format by clicking on the **Export CSV** download icon.



Notes

- All jobs that were run fully or partly within the selected time period will be included in job reports.
- Report plots are based on logged measurement data. Periodic measurement records are logged once per minute when the belt is running, and the volume/weight total is not zero. Additional records are logged for specific events. Downloaded CVS files include all logged measurement records.
- Logged data is retained on the system for a period of at least two years.

4 Maintenance and Support

4.1 Cleaning the Laser Lens

The CVS is a non-contact measurement system and requires no regular scheduled maintenance. The dark plastic laser lens recessed inside the laser window may need cleaning periodically. If dirt or grease build-up is visible, then clean the lens with a soft lint-free cloth and water only. We recommend cleaning the contamination off with a damp cloth and then polishing with a dry cloth. If the CVS user interface status indicator reports a warning with a “Visual pollution (dirty lens)” message, then clean the lens immediately. *Do not use chemical or abrasive cleaners.*

4.2 Technical Support

This manual and other support documents can be viewed/downloaded from the **Help** page accessible from the CVS user-interface menu.

To make a technical support request please visit:

<https://loadscan.com/support>

4.3 HTTP RESTful API

The HTTP RESTful API exposes the full functionality of the CVS for data retrieval and control by external network-connected software applications. The API may be used by integrators/software developers for tasks such as:

- Automatically pre-loading jobs
- Automatically updating the customer list
- Retrieving historical data for processing in reporting systems
- Retrieving current measurements for integration into control systems
- Creating custom user interfaces/applications for specific tasks

An API reference is available on the **Help** page accessible from the CVS user interface menu.

5 Technical Specifications

Belt Width: 400 ~ 2000 mm (16 ~ 79 inch) standard frames. Up to 3000mm (118 inch) with custom mount

Belt Speed: 0.1 ~ 12 m/s (0.33 ~ 39 ft/s)

Accuracy: > 98.5% typical*

Speed Sensor: Inductive speed sensor (proximity switch)

Ethernet Interface (LAN): Gigabit Ethernet (weatherproof RJ45 connector)

Wireless Interface (WLAN): 2.4 or 5 GHz 802.11n/ac (configurable band, hotspot or client mode)

Supported Communication Protocols: HTTP RESTful API

Switching Inputs (future use)

Number of Inputs: 1

Input Voltage Range: 3 ~ 32 VDC

Maximum Input Current: 18 mA

Isolation Voltage: 4000 Vrms

Switching Outputs (configurable status signals)

Number of outputs: 3

Load Voltage range: 3 ~ 32 VDC

Load Current Range: 0.02 ~ 2.5A

Isolation Voltage: 4000 Vrms

Power

Voltage: 9 ~ 36 VDC (90 ~ 305 VAC with external power-supply option)

Current: 3A max. @ 24 VDC with heater off, 6A max. @ 24 VDC with heater on (at start-up below 5°C)

Laser Scanner:

Laser safety: Class 1 (eye-safe)

Field of View: 90°

Angular resolution: 0.667°

Scan rate: 100 Hz

Operating Temperature

CVS-1S: -30 ~ 50°C (-22 ~ 122°F)

CVS-1W: -40 ~ 60°C (-40 ~ 140°F)

Weight:

CVS scan head: 10 kg (22 lb)

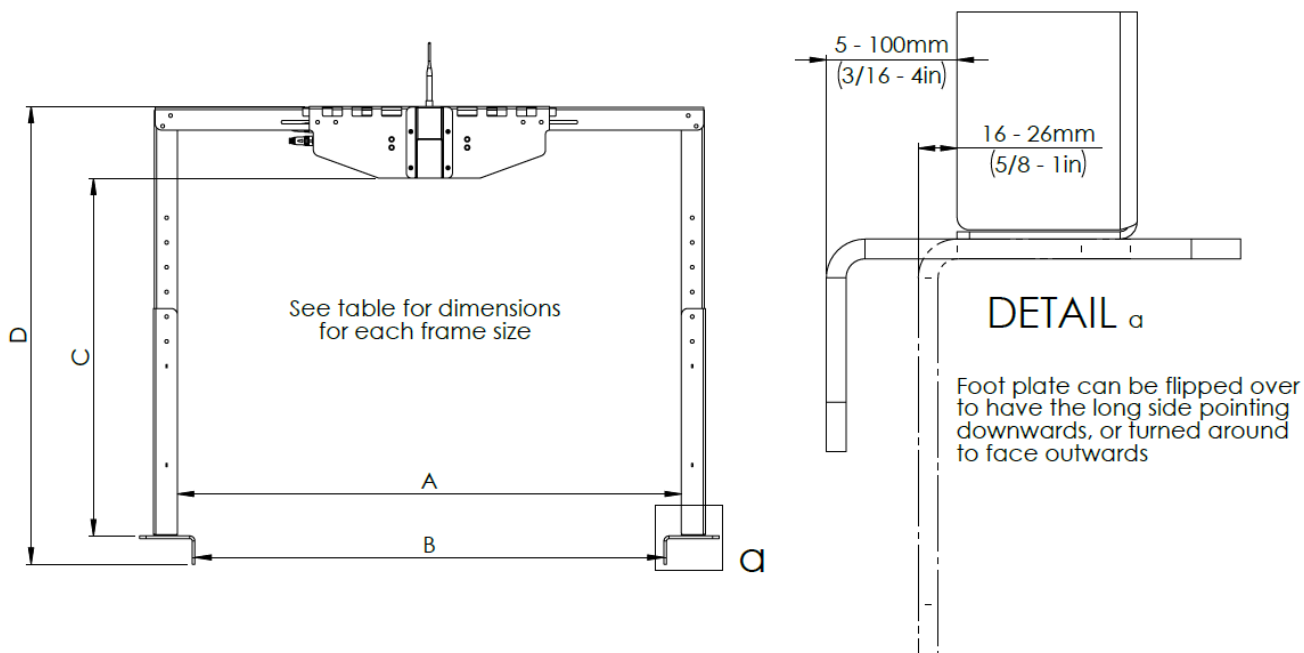
Small steel frame (excluding CVS scan head): 33 kg (73 lb)

Medium steel frame (excluding CVS scan head): 41 kg (90 lb)

Large steel frame (excluding CVS scan head): 49 kg (108 lb)

Dimensions: see dimensional drawings below

**Unadjusted surface volume measurement. Does not account for variations in product density affecting corrected volume or weight (mass) computations.*



Dimension	Small frame*		Medium frame*		Large frame*	
	Min	max	min	max	min	max
A	710 mm 27.95 inch	1160 mm 45.67 inch	1320 mm 51.97 inch	1770 mm 69.69 inch	1760 mm 69.29 inch	2210 mm 87.01 inch
B	510 mm 20.08 inch	1150 mm 45.28 inch	1120 mm 44.09 inch	1760 mm 69.29 inch	1560 mm 61.42 inch	2200 mm 86.61 inch
C	555mm 21.85 inch	1080 mm 42.52 inch	785 mm 30.91 inch	1310 mm 51.57 inch	1085 mm 42.72 inch	1610 mm 63.39 inch
D	858 mm 33.78 inch	1383 mm 54.45 inch	1089 mm 42.87 inch	1614 mm 63.54 inch	1388 mm 54.65 inch	1913 mm 75.31 inch

*Note that S, M and L frame extenders can be interchanged to produce extra high or extra wide variations.