

# **SPS VISION MANUAL**



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# Unpacking the SPS Vision System

ASSEMBLY INSTRUCTIONS FOR SPS VISION SYSTEM.

- 1. Lift of the top of the box.
- 2. Remove interior support structure





### ASSEMBLY INSTRUCTIONS FOR SPS VISION SYSTEM.

3. Lift out scale platform and camera assembly





ASSEMBLY INSTRUCTIONS FOR SPS VISION SYSTEM.

- 4. Install the camera mount with the 4 included screws.
- 5. Un-do the big screw and pull the top of camera mount up so camera is about 90cm over scale top, **tighten the screw**





#### ASSEMBLY INSTRUCTIONS FOR SPS VISION SYSTEM.

- 6. Attach USB cable to designated computer and camera ethernet to POE enabled Switch in your network. If you run with POE injector, attach Camera rj45 to POE injectors POE rj45 and computers rj45 or your local network to POE injectors LAN. Computer connected directly to camera via POE injector can run with automatically being assigned IP address or fixed IP address and internet sharing on, so camera is assigned IP address. See Appendix 1 Consult your IT department for network configurations. Camera is configured to receive DHCP address.
- 7. For software installation and usage please see coming pages.

## PLACEMENT AND USAGE.

## Important information regarding placement and operations.

SPS Vision system implement two camera systems, RGB (color) and a Laser based camera. Both cameras might be affected by everchanging light conditions. To limit environment light condition issues, observe the following.

- 1. Do not place the SPS Vision in a way that expose it to sunlight from for example windows. Light level will change with sun / day cycle.
- 2. Do not place the SPS Vision where the lightning is un-even, so it causes shadows to be casted from measured object itself or from staff operating the SPS Vision.
- 3. Do not stand to close to The Unit when doing the measurement. To make sure you do not cast shadows / cover up lights or effect the weight by touching the scale.
- 4. SPS Vision is to be used in indoor environments, well away from outdoor light environment.
- 5. Make sure the unit is placed on a work surface that is free from items that might interfere with the measurements.

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# Software installation - SPS Vision R2 client & Vision software

- 1. Download software package from <u>www.dimensionalweighing.com</u> menu option Service.
- 2. Extract the files to C:\SPSVision R2 so you end up with a directory structure like this C:\SPSVision R2
- 3. Run the setup file under C:\SPSVision R2
- 4. Click install button on the Application Install Security Warning
- 5. Once the install is done you are presented with the SPS Vision R2 window.



## Software Configuration SPS Vision R2 client

- 1. Enter administration mode by selecting the menu Edit -> Admin login, password is dimwei
- 2. Enter configuration via menu Edit -> Configuration. Configure as per the image below.

Table dimensions in cm	User defined value	es			Scale cali	ibration
Length 64	user_value1	Barcode	Clear	Not Null	Tare	10000
Width 64 user value2 Customer		Customer	Clear	Not Null	Multiple	80
Height 96,4	user_value3	user_value3	Clear	Not Null		
High res 🗌 Smoothing	user value4 user value4		Clear	Not Null	- Volume Weight	
] Imperial 🔲 Auto RUN	user_value5	user_value5	Clear	Not Null	Dim factor 250	
Enable 3D camera	user_value6	user_value6	Clear	Not Null		
7	user_value7	user_value7	Clear	Not Null	COM3	~
RinstrumR320 V	user value us	ed as camera prefix N	one 🗸	1	192	
CSV directory c:\parcelcube R2		]	Keyboard p Length = lo Width = lov Height = lov Weight = c Volume = lo Vol. weight TAB = low	wer case 1' ver case 1' wer case 'w' wer case 'h' apital 'W' ower case 'v' = lower case 'v' = case 't'	on F-Key F9 Delay 50	, , , , , , , , , , , , , , , , , , ,
CSV directory C:\parcelcube R2 WebServer API Bind to IP address 127.0.0.	1 ~		Keyboard p Length = lo Width = low Height = lo Volume	baste configuration wer case 1' wer case 'N' apital 'W' ower case 'N' er case 'V' er case t' im = lower case lower case 'ff' capital R	r-Key F9 Delay v' 50 'cr'	man mespin
CSV directory C:\parcelcube R2 WebServer API Bind to IP address 127.0.0. Bind to Port 8080	1 ~	]	Keyboard f Length = lov Width = lov Weight = lov Volume = lc Vol. weight TAB = lowe Carige retu Line feed = Register = (	paste configuratii wer case 't' wer case 'w' wer case 'h' apital 'W' wer case 't' = lower case 'v' er case 't' er case 't' m = lower case 'f' capital R h	v' F-Key F9 Delay v' 50 'cr' Tir	mespin
CSV directory C:\parcelcube R2 WebServer API Bind to IP address 127.0.0. Bind to Port 8080 Remote Webservice uri. Clear	1 v this to disabled		Keyboard f Length = lo Width = lov Height = lo Wolume = lc Volume	paste configuratii wer case 1' wer case 'w' apital 'W' wer case 'v' er case 'v' er case 'v' er case 'v' er case 'v' mr = lower case lower case ff' capital R h h h nsions in mm at in grams	r-Key F9 Delay v' 50 'cr' Tir	, , mespin
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Click save and ok on the request that pops up. Close the configuration window. Additional information can be found in the SPS 4C Manual see www.dimensionalweighing.com

3. Click Run in the menu. It now reads Running. Proceeded to set up the Vision system.



# Software Configuration Vision software

## 1. Navigate to C:\SPSVision R2\pcv and run Parcelcube

🔒   🛃 📘 🚽		Manage	pcv				-	· 🗆	×
File Home S	hare View App	plication Tools							~ ?
Pin to Quick Copy Pa access Clipb	Cut Copy path Paste shortcut	Move Copy to • Copy	Delete Rename	New folder	lew item 👻 asy access 👻 w	Properties Open	pen • Esele	ect all ect none ert selection Select	
$\leftrightarrow \rightarrow \checkmark \uparrow$	< Local Disk (C:) → Par	celcube R2 > p	EV	ٽ ~	,⊂ Sear	rch pcv			
🔮 Documents 🚿	Name	^	D	ate modified	Ту	pe	Size		^
📰 Pictures 🛛 🚿	opencv_flan	n341.dll	20	021-03-22 23:59	Ap	plication exten	518 KB		
🏪 Local Disk (C:)	opencv_higl	hgui341.dll	20	021-03-22 23:59	Ap	plication exten	197 KB		
👌 Music	opencv_img	codecs341.dll	20	021-03-22 23:59	Ap	plication exten	2 810 KB		
pcv	opencv_img	proc341.dll	20	021-03-22 23:59	Ap	plication exten	3 455 KB		
🐺 Videos	opencv_ml3	41.dll	20	021-03-22 23:59	Ap	plication exten	796 KB		
_	🚳 opencv_obj	detect341.dll	20	)21-03-22 23:59	Ap	plication exten	563 KB		- 64
OneDrive	opencv_pho	to341.dll	20	21-03-22 23:59	Ap	plication exten	987 KB		
💻 This PC	opencv_sha	pe341.dll	20	021-03-22 23:59	Ap	plication exten	325 KB		
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Pictures	Parcelcube	Vision.exe.config	20	21-06-10 09:54	CC	ONFIG File	2 KB		
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65 items 1 item sele	PercipioPack ected 168 KB	kageMeasure.dll	20	022-04-20 16:55	Ap	plication exten	3 KB	E	



## 2. Once application starts up click Configure System

System Mode	RGB Lens Adjustment		
Work Mode       1:Snapshot Mode         Trigger Mode       0:Continuous Mode         RGBD Aligned       1:Aligned         Save Pictures       0:No         Maximum pictures to save       -1         Image Optimize         Enhanced Filter       1:True         Speckle Filter       1:True         Filter Area Size       300         Fusion Count       1       [1,5]	RGB Auto Exposure       1:Tru         RGB Auto AWB       1:Tru         RGB Exposure Time       300         -Volume Algorithm Adjustment       300         -Volume Algorithm Detection       300         Thin Object Height Threshold       300         Background Color Difference       300         Calculation Algrithm Mode       300	e [0,1088] e [0,1088] 10 1:True 50 50 2:Irregular Use NEVER_BI Bounding BOX	mm [7,1000] Force mm [7,1000] [10,100] MX we bottom
Background Count     1     [1,5]       Depth Lens Adjustment     IR Exposure Time     600     [0,1088]       Laser Adjustment     1:True     ✓	Inegular Shrink     0.8       Error Correction (unit: mm)       Box:     0       Imegular:     0	[0,1.0] 0 0 0 0	
Laser Power 60 [0,100]			

3. Configure according to image above. Do not close the Configuration window. Bring the SPS Vision main screen to focus.



- 4. Click start System and place a white A4 paper on the scale plane.
- 5. Now change the RGB Exposure time until you have an image with exposure close to image below, ignore the red / blue rectangles

4		– _ ×
System is runing		**
Stop System		······
Exit System		
Configure System	L.	
Person Standing: Up Left Right Down		
Select ROI		
Select Bg		A
Rebuild BG		
	Detected an Object L:303,W:187,H:79	Capture

6. Once you have a setting that gives you an image similar to above, proceed to configure ROI and Bg. Close the configuration window. Remove the A4 paper



7. Click Select ROI and draw a rectangle as image belove show, then click button Click to save. Observe it's the RED rectangle that is solid.

System is runing		
Stop System	- province -	M
Exit System		
Configure System		
Person Standing: Up Left Right Down	Contraction and a second	
Select ROI		
Select Bg		R
Rebuild BG		
	Detected an Object L:297,W:210,H:1	Capture



8. Click Select Bg and draw a rectangle as image belove. Then click the Click to save button. This time it's the BLUE rectangle. Any RED dotted rectangle should disappear,

		- 🗆 X
System is runing		
Stop System		
Exit System		
Configure System		
Person Standing: Up Left Right Down		
Select ROI		K
Select Bg		R
Rebuild BG		
	Detecting Nothing L:0,W:0,H:0	Capture



- × = System is runing Stop System Exit System Configure System Person Standing: Up Down Select ROI Select Bg Rebuild BG Detected an Object.. Capture L:295,W:210,H:3
- 9. Place paper back on the scale and you should see a correct measurement done.



## 10. Bring the SPS Vision R2 client to front and you should see

0

Length 1 후 pc Length per item 29.5 Width 1 후 pc
Length per item 29,5 Width 1 🗬 pc
Width 1 🔹 po
F-
Width per item 21
Height 1 📮 po
Height per item 0.3
Theight per item
Weight per item 0,005
Item Counting
Set weight of 10pcs
# of pcs

Both applications need to be running during normal operations.

TIP, right click the SPS vision software icon(s) and select pin to taskbar.



# Troubleshooting

Clicking RUN in the menu bar (SPS Vision R2 client) result in a error opening serial port.
 Make sure the serial port have been installed. Windows update automatically installs the drivers once USB cable is plugged in.



- No weight data is displayed in the SPS Vision R2 software.
  Make sure the indicator is turned on, make sure you have in the configuration enabled Indicator connected and selected RinstrumR320
- 3. When Clicking Start System on the SPS Vision software it exits instead of showing camera image.

- The Vision hardware is not connected. Please make sure you have connected according to the assembly instructions.

4. Red dotted Rectangle show up when scale is empty OR not correctly around measured object.

- Make sure no items are littering around the unit, make sure personnel are not hindering lights or casting shadows / obstructing the measuring area. If problem remains, clear the scale and click Rebuild BG. Also make sure the red and blue rectangles are according to setup instructions.



## SPS Vision Software details

			- 0 X
1 System is runing			12
2 Stop System			
4 Exit System			- MA
5 Configure System			
6 Person Standing: Up Left Right Down			
7 Select ROI			
8 Select Bg			
9 Rebuild BG			
	Detecting Nothing L:0,W:0,H:0 10	11	Capture

- 1. Start the system
- 2. Stop the System
- 3. Measuring area / display
- 4. Exit software
- 5. Enter configuration
- 6. Stops / enables measurements to be done if personnel is detected.
- 7. Sets area the system will look for objects to measure.
- 8. Sets calibration data for thin objects. As per current light conditions etc.
- 9. Recalibrates the unit, might be needed if light condition have changed.
- 10. Displays measurement results
- 11. Not used as the software captures automatically.
- 12. Changes between the RBG view and depth view.



System Mode			RGB Lens Adjustment		12	
Work Mode	1:Snapshot Mode 🛛 🗸	] 1	RGB Auto Exposure	1:True ~	5	
Trigger Mode	0:Continuous Mode 🗸 🗸	]	RGB Auto AWB	1:True ~	-	
RGBD Aligned	1:Aligned ~	]	RGB Exposure Time 300	[0,1088]		
Save Pictures	0:No ~	]	Volume Algorithm Adjustm	ent		
Maximum pictures to	save -1		Normal Object Min Heig	ht 10		mm [7,1000]
			Automatic Thin Detectio	n 1:True	~	Force 6
Image Optimize		2	Thin Object Height Thre	shold 50		mm [7,1000]
Enhanced Filter	1:True V		Background Color Differ	ence 50		[10,100] 7
Speckle Filter	1:True V	]	Calculation Algrithm Mod	de 2:Irregu	ar v	8
Filter Area Size	300		V Only in Safe Area	9 k/ Use	NEVER BO	x 10
Fusion Count	1	[1,5]	Include All Objects	L1 Bour	nding BOX @	bottom
Background Count	1	[1,5]	Irregular Shrink 12	0,8 [0,1.0]		
	2		- Error Correction (unit: r	nm)	1012	
Depth Lens Adjustmen	t		Box: 0	0 0	] 14	
IR Exposure Time	600 [0	,1088] <sup>3</sup>	Imegular: 0	0 0	]	
Laser Adjustment						
Laser Auto Adjustmer	nt 1:True	4				
Laser Power	60	[0,100]				

- 1. System operation mode, settings should never be changed unless unit being diagnosed.
- 2. Image optimization. This is only used in diagnostic mode.
- 3. IR exposure time. Lower value if objects are mostly very shiny/reflective. For normal object as is.
- 4. Laser strength, lower value if shiny/reflective items. For normal object leave as is.
- 5. RGB camera settings, RGB exposure time needs to be set to not have over exposed or under exposed images. Example on page 10
- 6. Settings to select camera usage, Thin Object Height threshold decide what camera is used, above the value is laser camera while below the value is RGB camera.
- 7. Background color difference tells the RGB camera how much color difference between scale plane and measured object. If objects measured is similar in color to the scale background the value need to be set very low. 50 is standard. Setting this value very low makes the camera more sensitive to changes in light conditions.



- 8. Forces the system to calculate size of objects according to it being a perfect "box" or an irregular item. Box is faster, irregular is much more precise and can do irregular shaped objects.
- 9. If checked only objects fully inside the Red ROI rectangle will be measured.
- 10. Checked to get Slower but better calculations. Must have for irregular objects.
- 11. If several spaced out objects are placed on the scale, they will be measured as 1 big object
- 12. Add a shrink value to all objects detected as an irregular object. Example for polybags that conforms to exterior packages
- 13. n/a
- 14. add or decrease to measurement to correct for example packing material, safety margin, etc



## Maintenance

Weight calibration is described in the SPS 4C Manual Camera maintenance is generally not required but if lenses get dirty wipe off with soft damp cloth, only water no other chemicals.

If the system has been running for very long time, you might need to erase logs under c:\spsvision r2\pcv\logs SPS Vision client need to be shut down when you delete old log files.



# Appendix 1

#### Standalone option

SPS Vision USB cable -> Computers USB SPS camera Ethernet -> POE adapters POE Ethernet

POE adapter LAN RJ45 -> Computers Ethernet POE adapter Mains power -> Wall outlet for mains power

Computers Ethernet adapter can be left as unconfigured / DHCP or configured with an IP address but then Internet sharing must be enabled. Contact your IT department.

#### LAN connected option

SPS Vision USB cable -> Computers USB

SPS camera Ethernet -> POE enabled Switch in your local LAN

Your computer can connect as per your company's standard via ethernet or Wi-Fi