

Step-by-step instruction

Spot + Sonic Viewer Integration

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1 How to assemble the cage for SV600

Cage Components:

Name	Image	Quantity
base plate		1
Rail adapter	JAN	1
M5x8		2
M4 washer	0)	8
M5x10		4
M5 Washer	0	4
M4x8		8
1/4"-20 UNC		1

Lidar plate	A A A A A A A A A A A A A A A A A A A	1
Rail mount		4
Cage assy		1

Step 1. Place SV600 on top of <Base Plate>, fix SV600 on <Base Plate> using a <1/4"-20 UNC>



Step 2. Fix the back plate of SV600 using 2x <M5x8>





Step 3. Fix <Base Plate> on <Rail Adapter> using 4x <M4x8>

Step 4. Cover the assembled object with <Cage Assy> and fix it with using 4x <M4x8>



Step 5. It will look like below,



Step 6. Mount the SV600 with the cage on Spot using 4x <M5x10> and <Rail mount>



Place the <Rail mount> in the rail of Spot, screw up <M5x10>

2 Connecting the cable from Spot to SV600

Step 1. Connect a DB25 cable, which has the ethernet cable on the opposite side, to the female cable connector (payload ports) on the top of Spot.



Step 2. Connect the other side of cable to the ethernet socket of SV600



3 Connecting the cable from Spot I/O to SV600

Step 1. Loosen the screws on Spot Core I/O (Switch off Spot if Core I/O is mounted)Step 2. Loosen two screws in the green sockets



- Step 3. Detach the upper part of the socket
- Step 4. Put the red and black cable pin inside the one of the socket pins
- Step 5. Tighten the pin



- Step 6. Place the upper part of the socket back into the original position
- Step 7. Tighten up two screws
- Step 8. Connect the ethernet cable to the port



Step 9. Close the lid and fixate the lid with the screws **Step 10.** Connect the other side of cable to SV600



4 Network settings for SV600 as a Spot payload

Step 1. Connect the SV600 via a suitable PoE injector to a free ethernet port on your PC/Laptop

Step 2. Keep the serial number of the SV600 ready. The serial number can be found on the back of the device at the bottom-left.



Step 3. Open your web browser (Chrome, Firefox, Edge, Safari)

Step 4. Type http://<serial number> in your address bar. E.g. http://100110001

http://100110001	– @ ×

If your network does not have DNS server or if you connected the device directly to your PC add .local at the end of the serial number address. e.g. http:// 100110001.local

Step 5. Your browser will now show the device dashboard and prompt you to login. The default credentials are:



Step 6. In the device dashboard go to the "Device Configuration" page and click on "Networking".



Step 7. In the Network page set the network settings to "Use a Static IP address"

Step 8. Set

IP address	: 192.168.50.7
Subnetmask	: 255.255.255.0
Gateway	: 192.168.50.3
Primary DNS Address	: 0.0.0.0
Secondary DNS Address	: 1.1.1.1

Step 9. Press "Save"

5 SV600 Payload Registration

Step 1. Mount your SV600 in the cage on Spot with the layout suggested

e.g. Looking Forward



- Step 2. Connect the enclosed ethernet cable from SV600 to the Spot's port
- Step 3. Open your web browser (Chrome)
- Step 4. If Access point mode, *type https://192.168.80.3* in your address bar If Client mode, type *https://cassinged IP address>* in your address bar. e.g. *https://192.168.1.199*

Please refer to "Spot and SV600 integration User Manual" for more details

Step 5. In Spot dashboard, go to "Payloads"



Change password

spot-BD-21430008	Total Mass Of Attached Payloads: 10.939 kg
User Management	Visualize Payload Configurations 🛛
oser Munagement	Spot CORE 🖌
Network Setup	A CORE I/O EAP payload attached to the rear of the robot.
Software Update	GUID:
Spot License	✓ Attached
Logs	FORGET
About	
Payloads	Acoustic Camera payload 🖍
General Settings	An Acoustic Camera payload for spot
Battery	GUID: Last updated: Wed, Apr 19, 2023 5:10 PM +02:00
WiFi Dashboard	AUTHORIZE REJECT
Visualizer	
Signed in as admin	Spot CAM 🖍
Cierr out	A Spot CAM+IR payload with PTZ and Thermal Sensor attached to the front of the robot.
Sign out	GUID:
Change password	Last updated: wed, Apr 19, 2023 4:42 PM +02:00
	✓ Attached
	FORGET

Step 6. SV600 payload will automatically appear as "Acoustic Camera payload", and press "Authorize"

Step 7. Choose the payload layout that matches the actual layout e.g. "Front-mounted"



Step 8. If successfully registered, Acoustic Camera payload is now in the list with a GUID and layout indicated. Also with attached mark

Acoustic Camera payload 🖍

Front-mounted configuration.

GUID:

Last updated: Wed, Apr 19, 2023 5:10 PM +02:00

🗸 Attached





6 Create SV600 Acoustic Measurement DAQ plugin action

Step 1. Press "Hamburger" menu

Step 2. In "Settings", go to "Actions"



	STOP
ACTIONS	
ADMIN CONSOLE	
Origin Origin	
🗠 DOWNLOAD DATA 🧹 Pose	
AREA CALLBACKS	
REPORT BUG Open Door (Beta)	
SETTINGS CUSTOM INSPECTIONS	
Create New Action	
Empty Inspection	
Empty Inspection	
SPOT CAM SV600 Acoustic	

Step 3. In "Custom Inspections" section, press "Create New Action"

Step 4. Select "Empty Inspection" and press "Create"

×		<u>ی</u>	49% 💶 15% 🗻	STOP
0	ABOUT	Choose a template action.		
e	ADMIN CONSOLE	- Empty Inspection		
	DOWNLOAD DATA			
ŧ	REPORT BUG	CANCEL	CREATE	
\$	SETTINGS			
	UTILITIES			
	DISCONNECT			

- Step 5. Name your acoustic measurement
- Step 6. In Action, Choose "Daq"
- Step 7. In Data Acquisition Plugins 1, select "Sv600 Acoustic Measurements Metadata Sv600 Acoustic Measurements"

Х		(U) (O) (O) (O) (O) (O) (O) (O) (O) (O) (O	489 159	%	STOP
0	ABOUT	Inspection Editor		CANCEL	SAVE
G	ADMIN CONSOLE	NAME test			
ᢣ	DOWNLOAD DATA	ACTION Remote GRPC		Daq	
ŧ	REPORT BUG	DATA ACQUISITION PLUGINS 1			
\$	SETTINGS	Sv600 Acoustic Meaurements Metadata -	Sv600 Acoustic Mea	asurement	ts 🔻
	UTILITIES	✓ Service Pa	arameters		
г.		✓ Frequency	Parameter		
L⇒	DISCONNECT	FREQUENCY FROM ①	•		37000 Hz

Step 8. In Image 1, select "Soundsurface"

×			47% 💶 15% 🕶	STOP
0	ABOUT	Inspection Editor	CANCEL	SAVE
e	ADMIN CONSOLE	+ Add Data Acquisition Plugins		
\checkmark	DOWNLOAD DATA	IMAGES 1		
ŧ	REPORT BUG	Acoustic Streaming - Soundsurface		•
*	SETTINGS	Acoustic Streaming - Soundsurface Acoustic Streaming - Webcam		
	UTILITIES	Robot Cameras - Rear		37000 Hz
[→	DISCONNECT	Robot Cameras - Front Left		5000 Hz

Step 9. Press "Save"

7 Run a single DAQ plugin – SV600 acoustic measurements



Step 1. In drive mode, Press red + button

Step 2. Choose your acoustic measurement with the name that you set

×	STOP
INSPECTIONS ACTIONS	
Robot Cameras - Front	
Spot Cam - Ptz	
SV600 Acoustic Measurements	
Thermal Inspection	



Step 3. Pose SPOT to point toward the area of interest

Step 4. Select Frequency Range using "Frequency From" and "Frequency Range" parameters

Step 5. Press "Configure"

 $\label{eq:step 6. Choose your measurement among LeakQ, Image and Video$

e.g. LeakQ measurement

Step 7. Adjust the parameters

e.g SNR threshold, frequency range

÷		67% 💶 19% 💶	STOP
✓ Frequency Parameter			
FREQUENCY FROM			
FREQUENCY RANGE			
LeakQ -			
SNR THRESHOLD ()			
200			
	Sv600 Acoustic Meaurements Metadata - Sv600 Acoustic Measurements	NEXT	CREATE

Step 8. Fill in metadata if needed

÷		65% 💶 18% 💶	STOP
NAME Test			
ASSET ID			
+ Add Metadata			
	Name the Action		CREATE

Step 9. Press "Create"

8 Check Acoustic Measurement Results in SV600 dashboard

Step 1. Once the measurement is done, open your web browser (Chrome, Firefox, Edge, Safari).Step 2. E.g. the static IP address of SV600 is 192.168.50.7.

If Spot's network is set to 'Access point', go to http://192.168.80.3:23080

If Spot's network is set to 'Client', go to corresponding IP address with the port added, for example, http://192.168.1.199:23080

Step 3. Your browser will now show the device dashboard and prompt you to login. The default credentials are:

Username: admin		
Password: admin		

Step 4. In the device dashboard go to the "Device Configuration" page and click on "File Management"



≡				🕒 admin
	≺ _{Back} File	Management		
			search Q Sort by: Alphabetical (A-	Z) 💠 🛓 Logs 🛓 💼
		Path	Date & Time	Size
*		2023-01-25_0003.as2 2023-01-25_0004.mkv	2023-01-25 16:16:23 2023-01-25 17:19:23	1.53 MB 9.99 MB
Ţ		2023-01-26_0001.mkv	2023-01-26 13:54:25	2.12 MB
		2023-01-26_0003.mkv	2023-01-26 14:02:35	267.51 kB
		2023-01-26_0004.mkv 2023-01-26_0005.mkv	2023-01-26 14:02:37 2023-01-26 14:02:40	74.81 kB 88.91 kB
		2023-01-26_0006.mkv 2023-01-26_0007.mkv	2023-01-26 14:02:41 2023-01-26 14:02:44	73.81 kB 76.23 kB
		2023-01-26_0008.mkv	2023-01-26 14:02:45	88.94 kB

Step 5. choose the file and download it

- Path: The name of a file or item.
- Date & Time: Date and time of when the item was created.
- Size: The size of the item.
- Files can be searched by name by using the search bar.
- Sort by: Click the "Filters" button to sort the files by name, by date, or by size in ascending or descending order.
- Lick the "Download" button to download the currently selected files.
- Click the "Logs" button to download all the logs from the device.
- Use the "Delete" button to delete the selected files.

9 Record and Playback Autowalk Mission with Acoustic Measurements on the Tablet

9.1 Record

Step 1. Change Spot's mode from "Drive" to "Autowalk"



Step 2. Press "Record"

O O 36% 15% ►	STOP
AUTOWALK OPTIONS:	
► PLAYBACK	
EDIT	

9



Step 3. Name your autowalk mission and continue

Step 4. Press "Start Recording" to start recording





Step 5. Control your Spot and run multiple acoustic measurements when you need, as described at Chapter 4.

Step 6. Press "Finish Recording" to stop recording



9.2 Playback



Step 1. Change Spot's mode from "Drive" to "Autowalk"



← (- AUTOW	WALK		6	• •	31% 🗖	STOP
SORT BY:	✓ Date Rec	orded				VIEW POINT CLOUD
2023-04-24	test autowalk1		TEST	AUTOWALK1		
2023-04-14	emailtest			RECORDED	2023-04-2	24 16:46:37
2023-04-04	freq tests			LAST REPL	.AY: ?	
2023-03-31	hfdjytdu6rs			LENGTH: 7	7.58m	
2023-03-31	уууу		▼ A	VAILABLE MISSIONS		~
2023-03-31	uello			autogenerated		٢
2023-03-31	hhhhh					
2023-03-21	debub					
2023-03-20	domo				CON	TINUE
Step 4. Press	s "Play Now"					
← (• AUTO	WALK		0	• •	30% 💶 16% •	STOP
► TEST AU	TOWALK1	RECORDED: 2023-04-24 1	16:46:37	LENGTH: 7.58m	v	VAYPOINTS: 10
▼ AUTOWAL	K MODE		С	OMMS STATUS		
Once			\odot	Network Name		Sorama
The missio	on will run once.					Moderate
Loop			0	CHANGE	SUPERVISIO	N
► NAVIGATI	ON FAILURE BEHAVIO	R				
ACTION F	AILURE BEHAVIOR					
► PLAYBAC	KOPTIONS					
► MOVING O	BJECTS					
				PLA	YNOW	

Step 3. Choose your recorded autowalk mission and continue

9



Step 5. Press "Initialize" to start the autowalk mission

10 Running Autowalk Mission through Scout

- Step 1. Make sure you record your autowalk mission on your tablet
- Step 2. Go to Scout dashboard via an assigned IP address in your network. e.g. https://192.168.1.125
- Step 3. Sign in with the username and password specified in the sheet enclosed with Scout hub.
- Step 4. Make sure the robot is properly registered on Scout, please refer to Boston Dynamics Documentation
- Step 5. Press "Drive"
- **Step 6.** First save the mission that you recorded on the tablet, by clicking "Save Mission" and selecting the measurement with the corresponding name.





Step 7. Click "Play Mission" and click "Play Mission" again on the pop-up window

Step 8. While Scout is running autowalk mission, it is also possible to monitor the acoustic streaming service on the tablet.



11 Monitoring Autowalk Mission – Acoustic Measurements Results through Scout

Step 1. Go to "Session History"



Step 2. Click the mission with the chosen mission name



Step 3. E.g. LeakQ acoustic measurements contain webm video, captured acoustic streaming image from Spot tablet and image measurement from SV600.



Step 4. You can also preview the video and download it by clicking "View Session Details".

				e ۵
	⊜ ())		
			dB Level	55.24dB
04/19/2023 03:50 PM			SNR Value	232
			SNR Threshold	200
dB Level	55.24dB			

Step 5. Click "View Action Metadata" to see metadata information mainly indicating SPL value, SNR value and SNR Threshold





Step 6. Click "View Line Chart" to see the line graph drawn using SNR value.