SPOT GXP
PAYLOAD REFERENCE

SPOT 2.0
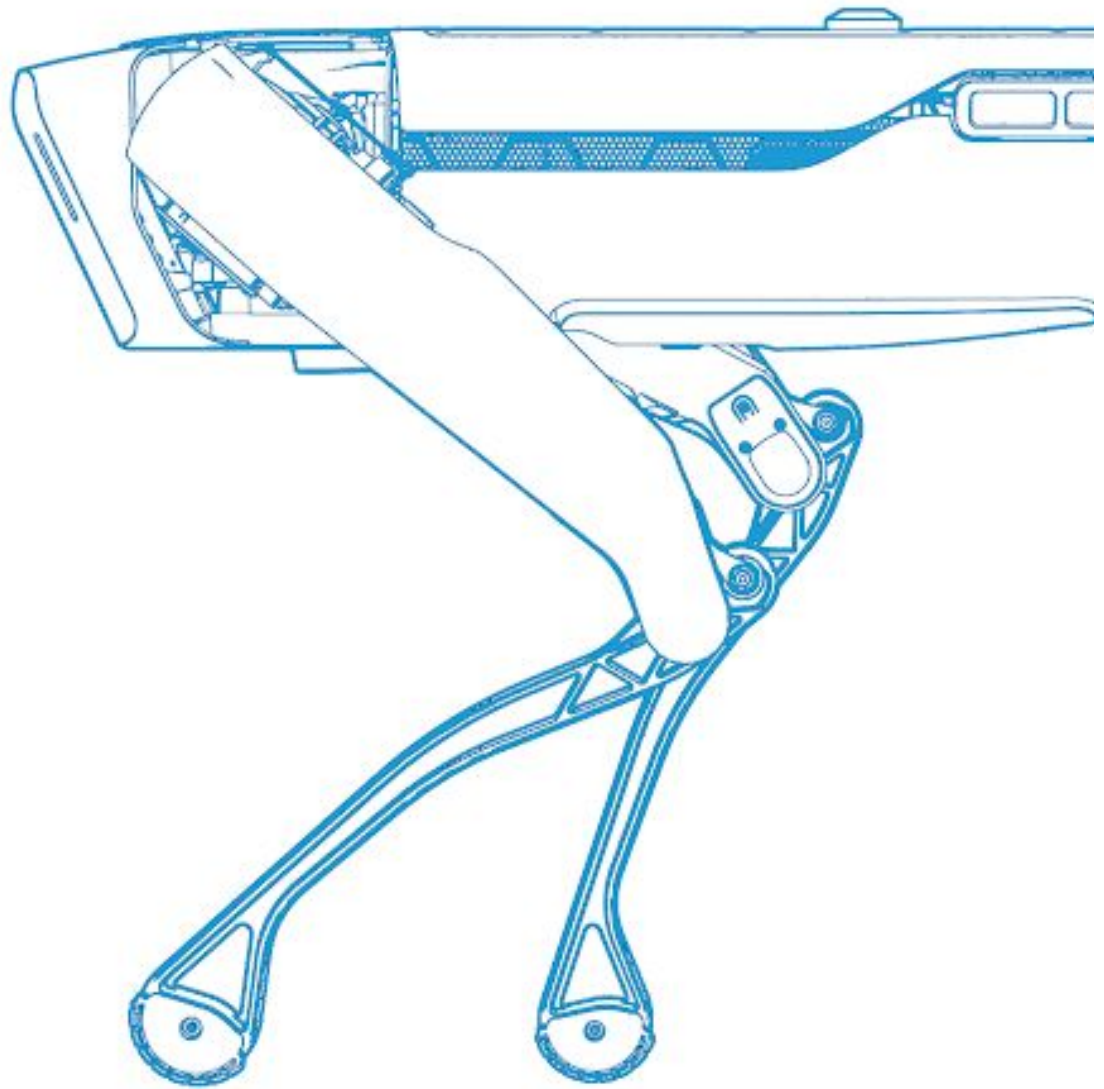
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SPOT GENERAL EXPANSION PAYLOAD

Spot GXP reference information, mounting instructions, and specifications

The Spot General Expansion Payload (GXP) provides clean, regulated power at useful voltages for easy prototyping and expansion of the Spot base platform.

Spot GXP is available with integrated E-STOP capability and also without E-STOP.

Attached on Spot's versatile payload mounting rails, the GXP provides an easy-to-use Ethernet connection to the robot payload port through an RJ45 connector. Finally, the GXP provides an interface for hardware time-synchronization between the Spot robot and a payload device.

Side view of mounted GXP

SPOT GXP DESIGN

Spot GXP expands the power options and ports available for custom payloads and communication systems.

Design features:

- Versatile mounting options on the robot's payload rail system
- Support for hardware motor inhibition and hardware motor power interlock
- Protected cabling and sealed electronics
- Functions as a roll-cage to protect smaller payloads
- Small size fits under the robot arm

WHAT'S IN THE BOX

| ITEM	DESCRIPTION
Spot GXP	The Spot GXP unit
Spot Payload Rails Mounting Kit	Fasteners for mounting payloads on the Spot robot's rail system
Shielded ribbon cable (225mm)	Pass-thru data connector

ATTACHING SPOT GXP

Parts required:

- M5 t-slot nut with set screw (2)
- Socket head cap screw - M5 x 20 (2)
- Boston Dynamics shielded ribbon cable, 225mm or 350mm

Tools required:

- Torque wrench with 2mm and 5mm hex keys
- Threadlocker
- #1 phillips screwdriver

Use M5 T-slot nuts (Misumi HNTR5-5)
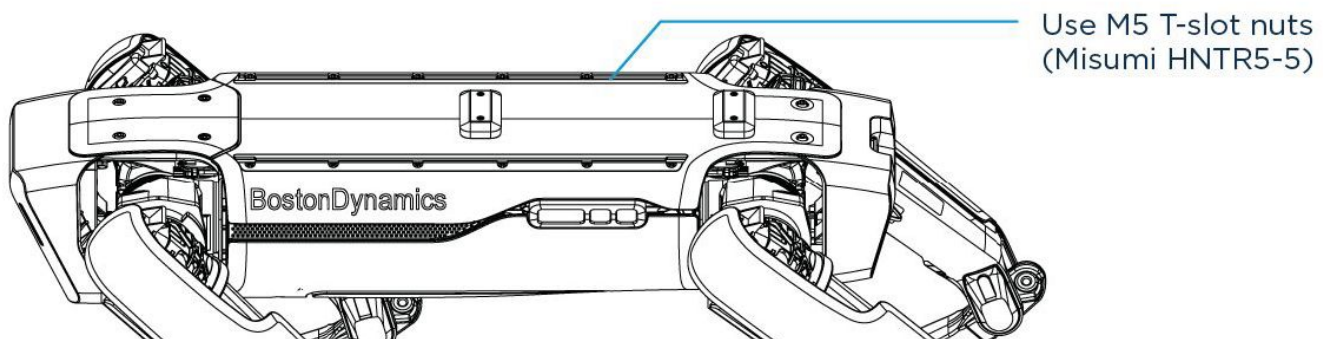
To attach the GXP:

1. Remove the cap on robot's port that will be used by the GXP.
2. Attach and fasten the ribbon cable to the bottom of the GXP and to the robot's port. Do not allow the ribbon cable to be twisted during or after installation.
3. Tilt to insert one t-slot nut into each rail with the set screw toward the front of the robot, and the point of the set screw facing down. Loosen the set screw, if needed, to tilt it into the slot and so that it moves freely.
4. Apply threadlocker to the M5 x 20 screws.
5. Position the GXP on the robot's rails and loosely thread the M5 x 20 screws through the mounting holes in the GXP into each t-slot nut.
6. Once the GXP is in position, evenly tighten each mounting screw to 0.2 N*m.

TIPS FOR ATTACHING GXP

- Do not twist the ribbon cable. Doing so might compromise its weather resistance.
- Loosen the t-slot nut set screw with the 2mm hex key, if needed, to fit it into the rail.
- Store the port cap in a safe place. The robot will not operate without the cap or a payload attached to the port.
- To easily remove a t-slot nut from the robot's rail, loosely thread an M5 screw into the t-slot nut and tilt to extract it from the rail.

NOTE: By design, the GXP does not appear in the list of attached payloads in the robot's admin console > Payloads page.

For detailed views of t-slot screw positioning in the robot's rail system, please refer to the *Spot Payload Hardware Reference*. Fastening hardware for the robot's rail system is available in the Spot Payloads Rails Mounting Kit from Boston Dynamics.

HD15 AND RJ45 INTERFACES

The HD15 on the back of the GXP provides regulated power to Spot payloads at 5v, 12V, and 24 volts. The RJ45 connects payloads to data and communications services.

The IP address a payload must use is determined by the payload port it is attached to, or in this case the payload port to which Spot GXP is attached to:

- Front payload port IP: 192.168.50.5
- Rear payload port IP: 192.168.50.6

By default, payloads communicate with the robot using the robot's IP address: 192.168.50.3. The gateway for the payloads should also be set to 192.168.50.3.

The RJ45 mates with an IP68 sealed cable assembly plug with a latching connector. Use Samtec AcclimMate RCE Series connectors if IP68 is desired.

The HD15 mates with an IP67 dust tight, waterproof connector with overmold boot.

Example: Assmann WSW Components Part Number A-HDS15-HOOD-WP
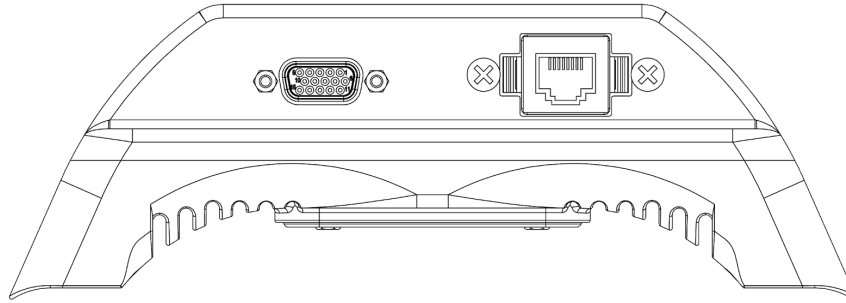
Spot GXP rear view

PINOUT DETAILS

(HD15 D-Sub Receptacle)

CATEGORY	PINS	SPECIFICATIONS
POWER	1-4, 6	Ground
	7, 8, 11, 12	12V
	13-14	24V
	15	5V
COMMUNICATION	5	PPS
SAFETY	9, 10	Motor power interlock (only available by special order request)

SPOT GXP SPECIFICATIONS

CATEGORY	DETAIL
Regulated power output	24V at 150W 12V at 150W 5V at 10W
Connectivity	1000Base-T ethernet RJ45: Latching overmold connector HD15: IP67 - Dust tight, waterproof
Hardware synchronization	5V TTL PPS signal output
Operating temperature	-20C to +45C
Ingress protection	IP65
Robot mount	Versatile mount point options on the robot's payload rail system
Dimensions	Length: 50mm Width: 192mm Height: 67mm
Weight	430g

CONTACTING SUPPORT

How to contact support and get help.

REPORTING BUGS

Reporting bugs helps Boston Dynamics improve Spot. Bugs can be logged during robot operation as follows:

1. Tap the hamburger menu in the tablet UI and select Log comment.
2. To log a potential bug, choose **Record Bug**.
3. Enter text describing the bug. The data is logged for review later using the admin console Log section.

Bugs reported on the controller are logged on Spot and must be downloaded from the robot and manually transmitted.

Contact support@bostondynamics.com to initiate a bug report.

CHANGE HISTORY

Document version	Date	Change description
1.0	Jan. 2020	Initial release with Spot v1.1.2
2.0	April 2020	Updated and republished for Spot v2.0