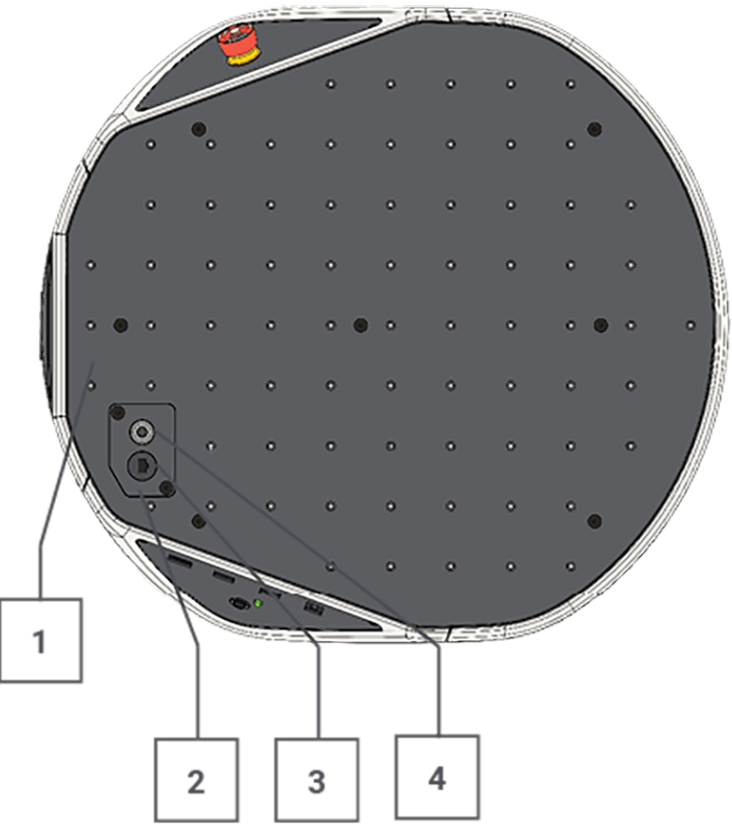


Freight100 extensibility interface

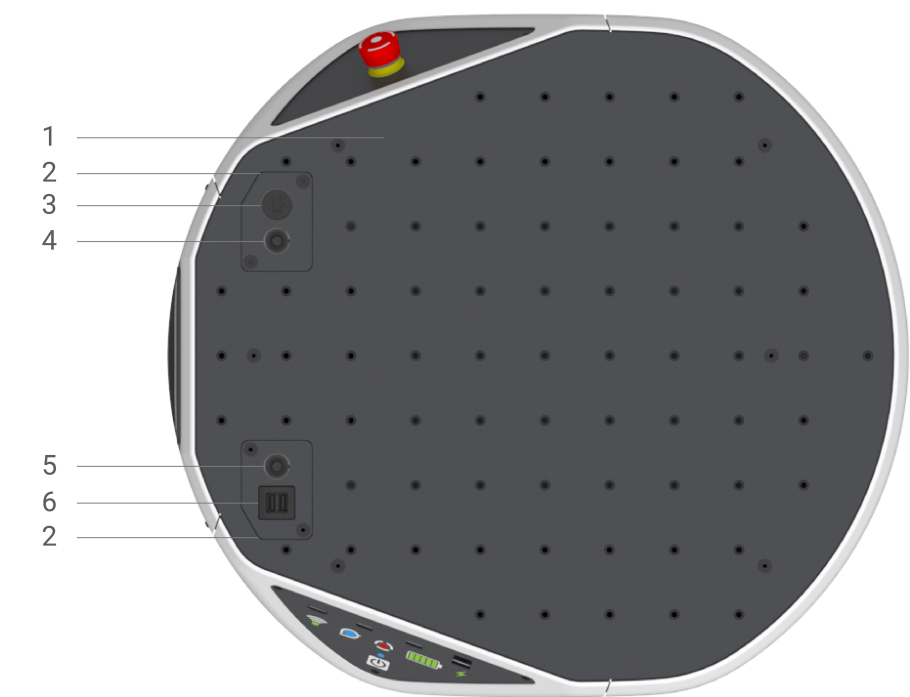
The Freight100 robot is designed to allow the addition of custom mounted accessories. It features auxiliary power and communication panels on the top surface of the robot for flexible connectivity to your accessory and its peripherals.

Freight100 v1



Number	Description
1	Top platform
2	Connector faceplate
3	Ethernet (default), USB 2.0 (x2), or blank
4	AUX 1 Power, Fetch internal communication bus

Freight100 v2

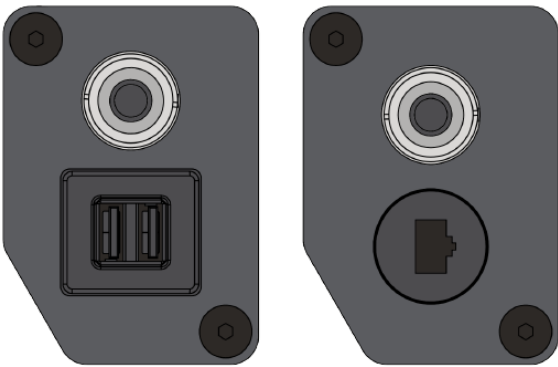


Number	Description
1	Top platform

Number	Description
2	Connector faceplate
3	Ethernet port (1000BASE-T RJ45 connector)
4	AUX 2 Power, 5-pin, Fetch internal communication bus
5	AUX 1 Power, 8-pin, Fetch internal communication bus, Run/Stop
6	USB A 3.0 port (x2)

Connector faceplates

For Freight100 v1, Fetch Robotics offers two faceplate options with either 2x USB 2.0 ports or an Ethernet port adjacent to the auxiliary power. Freight100 v2 features 2x USB 3.0 and an Ethernet port so you do not need to choose one.

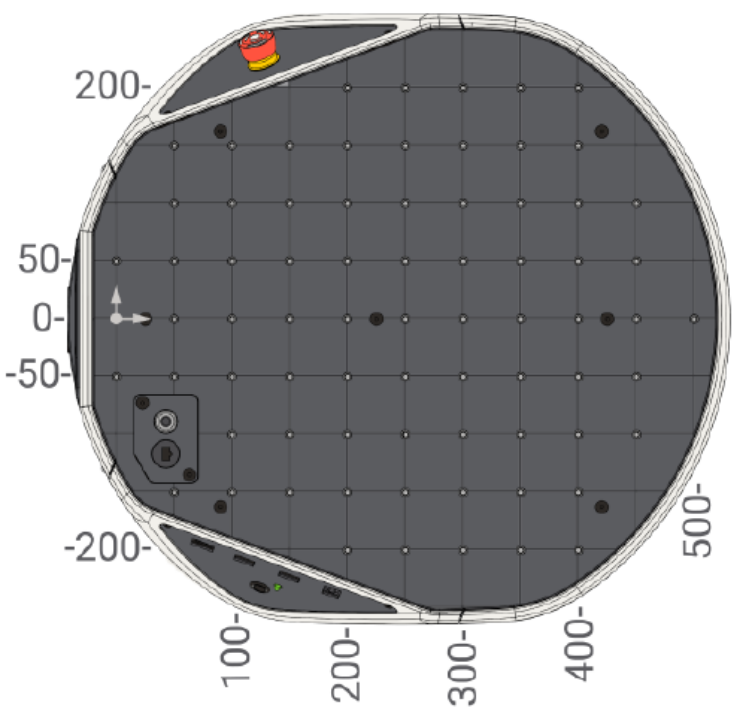


USB port	A USB Type A connector. Connects to two separate USB connectors under the top platform. Each connector can supply 500mA of full USB power.
Ethernet port	A 1000BASE-T RJ45 connector. Connects to the Ethernet switch under the top platform, and therefore, to the internal robot network.

Top platform mounting interface

The top platform features mounting holes for securely mounting accessories to the robot.

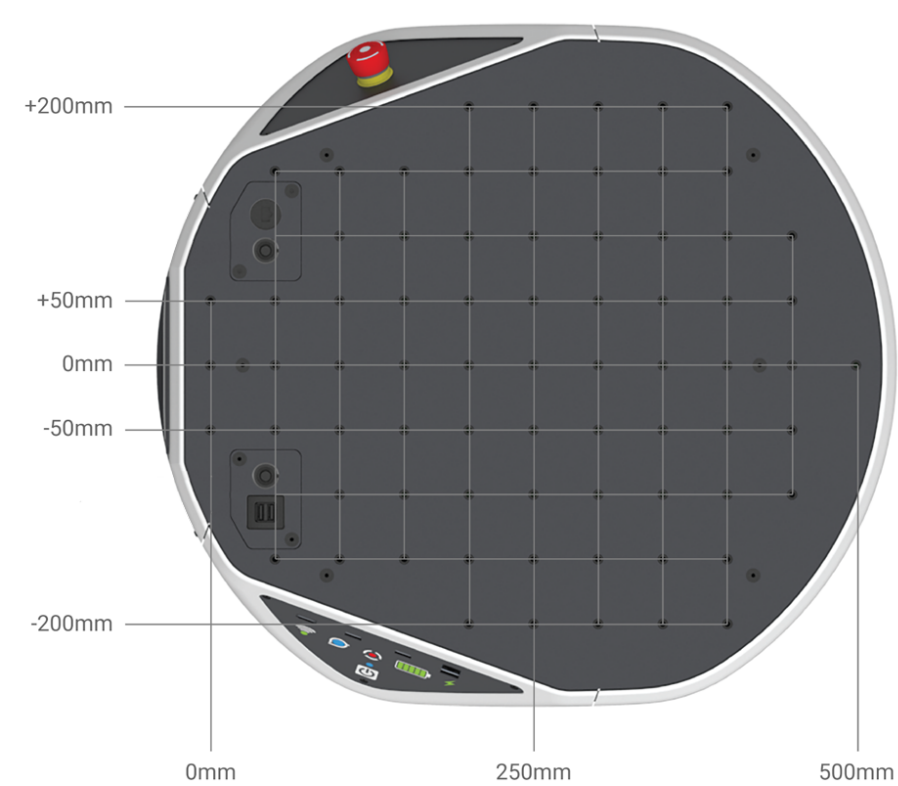
Freight100 v1



Number of mounting holes	74
Hole size	M5x0.8, 4 mm long
Mounting hole layout	50 mm x 50 mm grid

Tightening force	3.6 Nm (31.9 in-lb)
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Freight100 v2



Number of mounting holes	73
Hole size	M5x0.8, 4 mm long
Mounting hole layout	50 mm x 50 mm grid
Tightening force	3.6 Nm (31.9 in-lb)

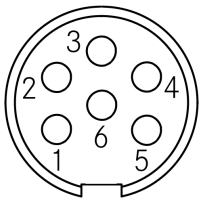
Power and signal specifications

The output power is supplied by an internal 24V nominal battery pack.

Freight100 v1

	AUX 1
Output maximum	33 V, 11 A
Output minimum	20 V
Output typical	24 V, 10 A (240 W)
Run/Stop controlled	Yes
Top platform connector location	88.6 mm x 42.75 mm relative to origin
Top platform connector	female Amphenol Tuchel connector T 3403 100
Communications bus	standard RS485, half duplex, 120ohm impedance, 2 Mbit default bit rate
Recommended connectors	Amphenol Tuchel T 3400 001 straight, 002 straight, 005 right angle plug

AUX receptacle Connector (on robot base)



Connector (corresponding plug)



Pin	Signal
1	GND
2	GND
3	PWR
4	PWR
5	RS485A
6	RS485B

Freight100 v2

AUX-1 is controlled by the state of the Run/Stop loop. If the Run/Stop loop is broken, the AUX-1 power source is turned off. A typical use case for AUX-1 is to power accessories that pose a potential hazard such as robotic arms or conveyor rollers. That way, the power to them can be cut in an emergency through the use of a Run/Stop button on the robot.

AUX-2 is not controlled by the Run/Stop. It always remains powered on regardless of the Run/Stop loop state. A typical use case for AUX-2 is to power accessory computing devices so they always remain on.

	AUX 1	AUX 2	USB 3.0
Output maximum	33 V, 18 A ^{1,2}	33 V, 10 A ³	-
Output minimum	20 V	20 V	-
Output typical	24 V, 15 A (360 W) ⁴	24 V, 7.5 A (180 W) ⁴	500 mA, each
Protection	Over-current ²	Over-current ³	-
Maximum capacitive load	4500 uF	4500 uF	-
Run/Stop controlled	Yes	No	-
Top platform connector location	(42.75 mm, -88.6 mm) relative to origin	(42.75 mm, 88.6 mm) relative to origin	-
Top platform connector	Female Amphenol Tuchel connector T 3507 150 8-pin	Female Amphenol Tuchel connector T 3363 150 5-pin	-

	AUX 1	AUX 2	USB 3.0
Communications bus	Standard RS485, half duplex, 120 ohm impedance, 2 Mbit default bit rate	Standard RS485, half duplex, 120 ohm impedance, 2 Mbit default bit rate	-
Recommended connector	Amphenol Tuchel T 3504 551 or T 3504 055	Amphenol Tuchel T 3360 551 or 3360 055	-

Note:

¹ 15 A is guaranteed by design, however pin 1, 6 and pin 2, 4 must be in parallel to achieve the current rating.

² Absolute maximum varies based on internal circuitry tolerances, 16 A to 19 A.

³ 7.5 A is guaranteed by design. Absolute maximum varies based on internal circuitry tolerances, 9 A to 11 A.

³ Varies with state of charge of the robot battery.

Note:

Paralleling of both AUX1 and AUX2 output power connections is not allowed.

AUX-1 receptable (on robot base)

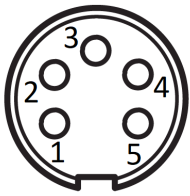


AUX-1 connector (corresponding plug)



AUX-1 Pin	Signal
1	GND
2	AUX-1 PWR
3	RS-485-1A
4	AUX-1 PWR
5	RUNSTOP-A
6	GND
7	RS-485-1B
8	RUNSTOP-B

AUX-2 receptable (on robot base)



AUX-2 connector (corresponding plug)



AUX-2 Pin	Signal
1	GND
2	AUX-2 PWR
3	NC
4	RS-485-2A
5	RS-485-2B