

Description

The BVR0 is a compact sidewalk-scale robotic platform for snow clearing and grounds maintenance. Four independently-driven hub motors provide omnidirectional control. A modular tool interface accepts snow augers, sweepers, and brine applicators. Remote operation via LTE teleoperation with 360° video.

Mechanical Specifications

| Parameter | Value |
|---------------------|----------------|
| Length | 600 mm (23.6") |
| Width | 600 mm (23.6") |
| Height | 400 mm (15.7") |
| Ground Clearance | 50 mm (2.0") |
| Wheel Diameter | 160 mm (6.3") |
| Track Width | 550 mm (21.7") |
| Wheelbase | 550 mm (21.7") |
| Weight (dry) | 25 kg (55 lb) |
| Weight (w/ battery) | 30 kg (66 lb) |
| Max Payload | 10 kg (22 lb) |

Electrical Specifications

| Parameter | Value |
|-------------------|-------------------|
| Battery Chemistry | Li-ion (13S4P) |
| Nominal Voltage | 48V |
| Voltage Range | 39V - 54.6V |
| Capacity | 20 Ah (960 Wh) |
| Motor Power | 4 × 350W (1.4 kW) |
| Peak Current | 60A per motor |
| Control Voltage | 12V DC |
| CAN Bus | 500 kbps |

Performance

| Parameter | Value |
|----------------------|------------------|
| Max Speed | 5.5 m/s (12 mph) |
| Operating Speed | 1.0 - 1.5 m/s |
| Max Wheel RPM | 650 RPM |
| Max Angular Velocity | 2.5 rad/s |
| Max Acceleration | 3.0 m/s² |
| Max Deceleration | 8.0 m/s² |
| Runtime | 3-4 hours |
| Max Grade | 15% |

Environmental

| Parameter | Value |
|-----------|-------|
|-----------|-------|

Sensors

| Sensor | Specification |
|--------------|--------------------------|
| LiDAR | Livox Mid-360 |
| • FOV | 360° × 59° (-7° to +52°) |
| • Range | 0.1m - 70m |
| • Points | 200,000 pts/sec |
| • IMU | Built-in, 200 Hz |
| Camera | Insta360 X4 |
| • Resolution | 8K (5.7K @ 30fps) |
| • FOV | 360° spherical |
| • Interface | USB-C (UVC) |

Compute

| Component | Specification |
|--------------|-------------------------|
| Processor | Jetson Orin NX 16GB |
| • CPU | 8-core Arm Cortex-A78AE |
| • GPU | 1024-core Ampere |
| • AI | 100 TOPS |
| Connectivity | Sierra MC7455 LTE |
| • Bands | LTE Cat 6 |
| • Speed | 300 Mbps down |
| Display | 7" HDMI (optional) |

Motor Controllers

| Parameter | Value |
|--------------------|----------------------|
| Controller | VESC 6.6 × 4 |
| Continuous Current | 60A |
| Peak Current | 150A |
| Control Mode | FOC (Field Oriented) |
| Feedback | Hall sensors |
| Motor Type | 32-pole BLDC hub |

Connectors

| Interface | Connector |
|----------------|------------------|
| Battery | XT90 (90A rated) |
| Motor Phase | 5.5mm bullet |
| 12V Aux | XT30 (30A rated) |
| Tool Interface | Deutsch DT06-6S |
| CAN Bus | JST-XH 4-pin |

Tool Interface

| Pin | Function |
|-----|----------|
|-----|----------|

| | |
|----------------|-------------------------|
| Operating Temp | −20°C to +40°C |
| Storage Temp | −30°C to +50°C |
| IP Rating | IP54 (splash resistant) |
| Precipitation | Light rain/snow |
| Max Wind | 40 km/h |

| | |
|---|-----------|
| 1 | 12V Power |
| 2 | GND |
| 3 | CAN High |
| 4 | CAN Low |
| 5 | Reserved |
| 6 | Reserved |

Safety Features

- Physical E-Stop button (mushroom, NC relay)
- Software E-Stop via operator interface
- Automatic stop on connection loss (>2s)
- LiDAR-based obstacle detection (1.5m radius)
- 100A main fuse at battery

Dimensions

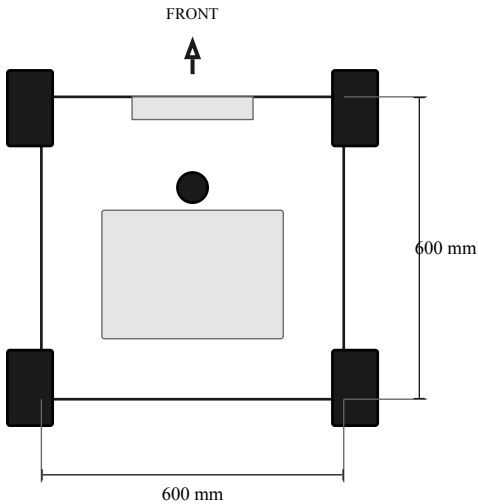


Figure 1: Top view

Ordering Information

| Part Number | Description |
|-------------|---------------------------|
| BVR0-BASE | Rover platform (no tools) |
| BVR0-AUGER | Snow auger attachment |
| BVR0-BRINE | Brine sprayer attachment |
| BVR0-SWEEP | Sweeper attachment |

Included

- BVR0 rover platform
- 48V 20Ah battery pack
- Battery charger
- XT90 battery cable
- Quick start guide

Not Included

- Tool attachments (sold separately)
- LTE SIM card
- Operator workstation