

Rover Telemetry Ranges

As outlined by the mission description, it is your job to alert a user of values outside of the ranges specified below. If a nominal value is specified, then a user should be alerted that they are deviating from that nominal value, even if they are still within the min/max values. The alerts, whether audible or visual, can be designed as you see fit based on your hardware/software. We have included some additional details explaining how these telemetry values interact with each other.

Value Name	Units	Min	Nominal	Max
pitch	deg	-50.00	-	50.00
roll	deg	0.00	-	50.00
speed	m/s	0.00	-	18.00
throttle	%	0.00	-	100.00
steering	%	-100.00	-	100.00
distance_traveled	meters	0	-	No Max
surface_incline	deg	-50.00	-	50.0
distance_from_base	m	0.00	-	2500.00
oxygen_tank	%	25.00	-	100.00
oxygen_pressure	psi	2997.00	-	3000.00
ac_fan_pri	rpm	29999.00	-	30005.00
ac_fan_sec	rpm	29999.00	-	30005.00
cabin_pressure	psi	3.50	4.00	4.10
cabin_temperature	°C	50.00	70.00	90.0
external_temp	°C		-	
pr_coolant_pressure	psi	495.00	500.00	501.00
pr_coolant_tank	%	60.00	-	100.00
battery_level	%	30.00	-	100.00

Rover Position:

These values are calculated in real time from the DUST software that is running the lunar simulator. As you move around in the lunar environment, you should notice these values reflecting the changes which can be used for calculating your autonomous navigation system or other development needs.

Many of the other telemetry values like the battery level are calculated in real time based on the rover position values from the DUST simulator. For example, as you move around, your battery level will go around.

Rover Atmosphere:

The atmosphere of the pressurized rover is extremely critical to maintaining the safety of the astronauts inside of it. Oxygen is supplied via an oxygen tank that is filled before departure, it is important that oxygen consumption is monitored to maintain a safe timeline to return to base.

Temperature:

These are values directly related to the

Rover Power:

Solar panels are the primary way of regenerating power for the rover while away from base. Factors such as dust and sunlight will impact the efficiency of the panels. As you expose your rover to sunlight, you'll notice that the battery percentage will actually begin to slightly charge indicating that the solar panels are recharging the battery cells of the pressurized rover.