



## **2024 MVAV Isuzu Overlanding Expedition Camper**

2022 Isuzu NPR Diesel 132" wheel base paired with Globe Trekker 13.5' box and Zero torsion subframe

# Electrical

- Lithionics 630 AH at 24V / 1260AH at 12V
- Parallel 2500W Cotek Pure Sine Wave Inverters for a total of 5000W of continuous power and 8000W surge capacity
- Single 1500W Cotek pure sine wave inverter for fridge
- Two Victron DC to DC 12V to 24V/15A Chargers coming from main alternator to charge house batteries
- Two Samlex DC to DC converters converting 24V battery power to 12V for any of the 12v Appliances such as ( Water pump, lights, awning, uv water purifier)
- One Victron MPPT 250-60 Solar Charge controller
- 1460W of solar
- Cotek CX-2440 40A charger to charge from shore power.
- Electrical Cabinet is climate controlled

## Electrical System Overview

This electrical system is designed to provide a reliable power source for various appliances and devices in an off-grid or mobile environment. Here's a detailed description of how it operates, along with the functionality of each component:

## Components and Functions\*\*

1. \*\*Lithionics Battery 15.12KWH (630 AH at 24V / 1260 AH at 12V)
  - The heart of the system, storing electrical energy.
  - At 24V, it provides 620 amp-hours (AH) of capacity, which translates to a substantial amount of stored energy (15.12 kWh).
  - This battery powers the entire system, ensuring a steady and reliable supply of power.
2. Dual 2500W Cotek Pure Sine Wave Inverters
  - These inverters convert the 24V DC from the battery into 120V AC power.
  - Each inverter can handle up to 2500 watts of continuous power, suitable for high-demand appliances.
  - Pure sine wave output ensures compatibility with sensitive electronics and efficient operation.
3. Single 1500W Cotek Pure Sine Wave Inverter for Fridge
  - Dedicated to powering the refrigerator, ensuring it has a consistent and reliable power source.
  - Pure sine wave output is ideal for the compressor motor in the fridge, which can be sensitive to power quality.
4. Two Victron DC to DC 12V to 24V/15A Chargers
  - These chargers draw power from the vehicle's main alternator to charge the 24V house batteries while driving.
  - Each charger provides up to 15 amps, ensuring efficient charging of the house batteries from the vehicle's electrical system.
5. Two Samlex DC to DC Converters (24V to 12V)

- These converters step down the 24V battery power to 12V for appliances that require 12V DC.
- They power various 12V appliances such as the water pump, lights, awning, and UV water purifier.

#### 6. Victron MPPT 250-60 Solar Charge Controller

- Manages the power coming from the solar panels and ensures efficient charging of the 24V battery.
- MPPT (Maximum Power Point Tracking) technology maximizes the energy harvested from the solar panels.

#### 7. 1460W of Solar Panels

- These panels capture solar energy and convert it into DC electricity.
- Providing up to 1460 watts of power under ideal conditions, they significantly contribute to charging the batteries and reducing dependence on other power sources.

#### 8. Cotek CX-2440 40A Charger

- Used to charge the 24V battery from shore power (AC mains power).
- Capable of providing up to 40 amps of charging current, ensuring the batteries can be charged quickly and efficiently when connected to an external power source.

#### 9. Climate-Controlled Electrical Cabinet

- Houses all the electrical components, protecting them from environmental extremes.
- Climate control maintains an optimal operating temperature for all components, ensuring longevity and reliable performance.

### System Operation

#### - Battery Charging

- While Driving: The vehicle's alternator charges the 24V house batteries through the Victron DC to DC chargers.
- From Solar: The solar panels provide power to the batteries via the MPPT charge controller, optimizing energy harvest.
- From Shore Power: When connected to an external AC power source, the Cotek CX-2440 charger recharges the batteries.

#### - Power Conversion and Distribution

- The dual 2500W Cotek inverters convert 24V DC battery power to 120V AC for general use.
- The dedicated 1500W Cotek inverter ensures the refrigerator has a stable power supply.
- The 24V to 12V Victron converters supply power to 12V appliances, ensuring all devices get the correct voltage.

### Summary

This well-designed electrical system provides robust and reliable power management for an off-grid or mobile setup. It integrates multiple power sources, ensuring that the batteries remain charged and appliances run smoothly, regardless of the operating conditions. Climate control of the electrical cabinet enhances the durability and performance of all components, making the system highly efficient and dependable.

# Water System

- All tanks are heated
- 100 Gallons of fresh water
- UV water purifier system
- 1.5 Gallon Ecosmart Hot water heater.
- 6 GPM 70PSI Self-Priming Diaphragm Water Pump
- Locking gravity fill
- 28 Gallons of black water
- Two gray water tanks (18 Gallons for shower and 15 gallons for kitchen)
- Indoor Tetravan shower
- Outdoor Alu-Cab shower
- Full flushing Toilet inside

## Water System Overview for Overlanding Truck

This comprehensive water system is designed to ensure ample supply, effective purification, heating, and waste management in an overlanding truck. Here's a detailed description of how the system operates, along with the functionality of each component:

### Components and Functions

#### 1. 100 Gallons of Fresh Water

- Large-capacity tank ensures a sufficient supply of potable water for extended overlanding trips.
- Provides water for drinking, cooking, bathing, and other needs.

#### 2. UV Water Purifier System

- Ensures all water from the fresh water tank is safe for consumption by eliminating bacteria, viruses, and other pathogens.
- The UV purifier treats water as it's drawn from the tank, providing a continuous supply of purified water.

#### 3. 1.5 Gallon Ecosmart Hot Water Heater

- Provides on-demand hot water for showers and washing.
- Energy-efficient, heating water only when needed to conserve power and water.

#### 4. 6 GPM 70 PSI Self-Priming Diaphragm Water Pump

- Pumps water from the fresh water tank to all water outlets in the system.
- Self-priming and capable of maintaining a consistent water flow and pressure (70 PSI) to ensure effective water delivery to showers, faucets, and the toilet.

#### 5. Locking Gravity Fill

- Secure method to refill the fresh water tank.
- Ensures the tank can be refilled without risk of contamination, using a gravity-fed system.

#### 6. 28 Gallons of Black Water Storage

- Collects waste water from the full flushing toilet.
- Designed to handle waste efficiently and securely until it can be disposed of at an appropriate facility.

#### 7. Two Gray Water Tanks

- 18 Gallons for Shower: Collects water from the indoor shower.
- 15 Gallons for Kitchen: Collects water from the kitchen sink.
- Separating gray water helps manage waste water more effectively and simplifies disposal.

#### 8. Indoor Tetravan Shower

- Provides a comfortable and private space for indoor showering.
- Connected to both hot and cold water supply, with drainage to the gray water tank

#### 9. Outdoor Alu-Cab Shower

- Convenient for rinsing off outside, particularly useful after outdoor activities.
- Equipped with both hot and cold water.

#### 10. Full Flushing Toilet Inside

- Provides the comfort and convenience of a residential-style toilet.
- Flushes waste into the black water tank, maintaining hygiene and preventing odors.

### System Operation

- Water Supply and Purification
- Fresh water is drawn from the 100-gallon tank by the water pump.
- All water passes through the UV purifier to ensure it is safe for drinking and other uses.

### Water Distribution

- The self-priming diaphragm pump maintains a steady pressure of 70 PSI, delivering water to all outlets, including faucets, showers, and the toilet.
- The hot water heater provides hot water on demand for both indoor and outdoor showers, as well as sinks.

### Waste Water Management

- Gray Water- Water from showers and sinks is directed to the respective gray water tanks. The shower tank holds 18 gallons, while the kitchen tank holds 15 gallons.
- Black Water- Waste from the flushing toilet is stored in the 28-gallon black water tank.
- This separation allows for easier management and disposal of waste water.

### Refilling and Maintenance

- Fresh water is replenished through the locking gravity fill port, ensuring secure and contamination-free refilling.
- Regular monitoring and emptying of gray and black water tanks are essential to maintain system functionality and hygiene.

### Summary

This water system is engineered to provide a reliable and convenient water supply for an overlanding truck, ensuring all water used is purified and efficiently managed. The system includes facilities for both indoor and outdoor showers, a hot water supply, and effective waste management, making it suitable for long-term overlanding adventures. By separating fresh, gray, and black water, the system maintains hygiene and simplifies the maintenance process, ensuring a comfortable and sustainable overlanding experience.

# Exterior

- 10' Girard Electric Awning wind and drive away safe
- Max traxxs
- Full size spare tire
- Front rear bumper
- 4 side storage cabinets under box
- Hydronic lift system by EQ Systems for leveling truck and changing spare tire
- Sherpa 4x4 winch 25,000lb
- Exterior ladder
- Star link
- Off road MT tires 225/70/19.5
- TPMs monitoring system
- Scheel-Mann seats in cab
- Roof rack
- Wrapped cab
- Five arctictern windows
- Brush guards
- Air compressor
- 40 foot hose reel

## Product Summaries for Overlanding Truck Exterior

### 1. 10' Girard Electric Awning (Wind and Drive Away Safe)

- Provides shade and protection from the elements with easy electric deployment and retraction.
- Designed to automatically retract in high winds and while driving to prevent damage.

### 2. Max Trax

- High-quality recovery tracks for gaining traction on difficult terrain such as sand, mud, and snow.
- Essential for self-recovery in off-road conditions.

### 3. Full-Size Spare Tire

- An additional tire matching the truck's off-road tires, ensuring you're prepared for unexpected punctures or damage.

### 4. Front and Rear Bumpers

- Heavy-duty bumpers designed to protect the vehicle from impacts and provide mounting points for accessories like winches and lights.

### 5. 4 Side Storage Cabinets Under Box

- Convenient external storage compartments for tools, recovery gear, and other essentials, maximizing space and organization.

6. Hydronic Lift System by EQ Systems
  - Hydraulic system for leveling the truck on uneven terrain and facilitating tire changes with ease.
7. Sherpa 4x4 Winch (25,000 lb)
  - High-capacity winch for heavy-duty recovery, capable of pulling the truck out of tough situations.
8. Exterior Ladder
  - Provides easy access to the roof for maintenance, loading, or utilizing the roof rack.
9. Starlink
  - Satellite internet system offering high-speed connectivity in remote locations, ensuring reliable communication and internet access.
10. Off-Road MT Tires (225/70/19.5)
  - Mud-terrain tires designed for superior traction and durability on rough and uneven surfaces.
11. TPMS Monitoring System
  - Tire Pressure Monitoring System that continuously tracks tire pressure and alerts the driver to potential issues, enhancing safety.
12. Scheel-Mann Seats in Cab
  - Ergonomic and comfortable seats designed for long drives, providing excellent support and reducing driver fatigue.
13. Roof Rack
  - Sturdy platform for carrying additional cargo, gear, and equipment, optimizing storage capacity.
14. Wrapped Cab
  - Protective and aesthetic wrap for the cab, offering additional durability and a customized look.
15. Five Arctic Tern Windows
  - High-quality windows providing insulation and ventilation, suitable for extreme weather conditions.
16. Brush Guards
  - Protective bars mounted on the front of the vehicle to shield against branches and debris, preserving the vehicle's bodywork.
17. Air Compressor
  - Portable compressor for inflating tires and powering pneumatic tools, essential for off-road adjustments and repairs.
18. 40-Foot Hose Reel
  - Conveniently stores and deploys a long hose, useful for washing, filling water tanks, or using air tools.



# Interior

- 6.5 cubic foot Liebherr inverter refrigerator / 2.5 cubic-foot freezer
- Shower by tetra van
- Full flushing toilet
- Stainless Steel Sink
- Seating for two
- Table
- 32 inch fold down tv
- Queen bed
- air fryer microwave
- Spice rack pantry combo
- 9000 btu blue ridge split unit ac and heating
- Dimming overhead ceiling lights
- Dimmable reading lights in bed with USB

## Product Summaries for Overlanding Truck Interior

### 1. 9 Cubic Foot Liebherr Refrigerator

- A spacious and energy-efficient refrigerator, offering ample storage for perishable items with advanced cooling technology.

### 2. Shower by Tetra van

- A compact and efficient indoor shower system, providing a comfortable and adjustable bathing experience with reliable drainage.

### 3. Toilet

- A full flushing, compact toilet connected to a black water tank, offering the convenience and hygiene of a residential-style bathroom.

### 4. Stainless Steel Sink

- A durable and easy-to-clean sink, perfect for daily use with an integrated faucet and modern design.

### 5. Seating for Two

- Comfortable and ergonomic seating for two, featuring durable upholstery and built-in storage options.

### 6. Table

- A versatile and space-saving table for dining or working, designed to be easily stowed when not in use.

### 7. 32-Inch Fold Down TV

- A high-definition, foldable TV providing entertainment options, with an integrated mount for space efficiency.

#### 8. Queen Bed

- A comfortable queen-size bed with a high-density foam mattress, designed for optimal space utilization and potential storage underneath.

#### 9. Air Fryer Microwave

- A multifunctional appliance combining air frying and microwave capabilities for quick and healthy meal preparation.

#### 10. Spice Rack Pantry Combo

- An organized storage solution for spices and pantry items, ensuring easy access and secure storage.

#### 11. 9000 BTU Blue Ridge Split Unit AC and Heating

- A dual-function climate control system providing efficient cooling and heating for a comfortable indoor environment.

#### 12. Dimming Overhead Ceiling Lights

- Energy-efficient LED ceiling lights with adjustable brightness, enhancing the indoor ambiance and comfort.

#### 13. Dimmable Reading Lights in Bed with USB

- Adjustable LED reading lights with built-in USB charging ports, offering convenience and customizable lighting near the bed.