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## Varstrom FM 125EVH.48.500.100

# Varstrom 48V 500W Ebike Conversion Kit Instruction Manual

Model: FM 125EVH.48.500.100

## 1. SAFETY INFORMATION

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Read all instructions carefully before installation and operation. Failure to follow safety guidelines may result in injury or damage to the product.

- **Professional Installation Recommended:** If you are unsure about any installation steps, seek assistance from a qualified bicycle mechanic.
- **Wear Safety Gear:** Always wear a helmet and appropriate safety gear when riding an e-bike.
- **Local Regulations:** Adhere to all local laws and regulations regarding e-bike use, speed limits, and safety.
- **Battery Handling:** Handle the battery with care. Do not puncture, expose to extreme temperatures, or immerse in water. Use only the provided charger.
- **Electrical Connections:** Ensure all electrical connections are secure and waterproofed to prevent short circuits and damage.
- **Brake Check:** Before each ride, verify that your brakes are functioning correctly.

## 2. PACKAGE CONTENTS

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Verify that all components are present in your package:

- Pre-laced Front Wheel with 500W Hub Motor
- Intelligent Controller & Wiring Harness
- Pedal Assist (PAS) Sensor

- Thumb Throttle
- Brake Levers (for motor cutoff)
- EKD01 Display
- Headlight
- Ebike Battery (Optional, specific capacity depends on order)
- Comprehensive Installation Manual



**Figure 2.1:** Overview of the Varstrom Ebike Conversion Kit components and their connections. This diagram shows the intelligent controller, hub motor, PAS sensor, thumb throttle, brake levers, EKD01 display, headlight, and optional battery, along with a table detailing controller specifications such as DC rated voltage, rated power, limit current, rated current, under-voltage protection, and over-voltage protection.

### 3. PRODUCT OVERVIEW

The Varstrom 48V 500W Ebike Conversion Kit transforms a standard bicycle into an electric bike. It features a front hub motor, an EKD01 TFT display, and various battery options, designed for commuter and leisure riding.

#### 3.1. Front Hub Motor

- **Type:** Gear Drive Brushless Motor
- **Rated Power:** 500W
- **Peak Power:** Up to 800W
- **Max Torque:** 65N·m
- **Max Speed:** 40-45 km/h
- **Dropout Size:** 100mm Front Dropout
- **Waterproofing:** IPX5 Rated
- **Noise Level:** Under 60dB
- **Brake Compatibility:** Supports Disc and V-Brake systems



**Figure 3.1:** Varstrom 125EVH 48V 500W Front Hub Motor specifications. This image details the motor's rated power (500W), peak power (800W), max torque (65N·m), front dropout size (100mm), max speed (40-45km/h), and IPX5 waterproof rating.

# 125EVH 48V500W (Standard Version)



Front Hub Motor



Rated Power	500W
Peak Power	800W
Rated Voltage	48V
Max Speed	40-45KM/h
Max Torque	65N.m
Efficiency	≥78%
Motor Type	Gear Drive Brushless Motor
Compatible Size	100mm Front Dropout
Brake Type	Disc Brake / V Brake
Cassette Type	≤10-Speed Cassette
Noise Grade	<60dB
Waterproof	IPX5
Certification	CE / RoHS / REACH



Figure 3.2: Detailed view of the 125EVH 48V 500W Front Hub Motor. This image illustrates the 6-hole mounting type, cassette type, and confirms a 100mm compatible rear dropout size, along with precise dimensions of the motor.

## 3.2. EKD01 TFT Display

- **Screen Size:** 2.4" TFT
- **Waterproofing:** IP67 Rated
- **Features:** Displays speed, battery level, assist mode. Supports one-key speed limiting and connection to the BIKEGO+ app for tracking and customization.

# EKD01 Display



Support Remote Locking & Unlocking  
(On "BIKEGO+" APP)



Quick-Switch to 25 km/h  
Street-legal Mode

(Holding "+" and "-" Button Together)



2.4" TFT

Screen



φ22.2/25.4mm

Holder



9 PAS

Level



IP67

Waterproof



English, Français, Español,  
Italiano, Deutsch, Polski,  
Nederlands, Čeština, 中文

**Figure 3.3:** EKD01 TFT Display. This image shows the 2.4-inch EKD01 display, highlighting its clear interface for speed, battery level, and assist mode, its IP67 waterproof rating, and its compatibility with the BIKEGO+ app for remote locking and tracking.

### 3.3. Battery Options (Optional)

The kit offers flexible 48V battery options, including bottom tube and rear rack types. All batteries include a charging adapter, compatible mount, XT60 connector, and intelligent BMS.

# BATTERY PARAMETERS

• 48V 13Ah Shark Battery		• 48V 16Ah Shark Battery		• 48V 19.2Ah Shark Battery		• 48V 20Ah Shark Battery	
Type	48V 13Ah	48V 16Ah	48V 19.2Ah	48V 20Ah			
Watt Hour	624Wh	768Wh	921.6Wh	960Wh			
Battery Cell	18650 2600mAh	18650 3200mAh	L*/G 21700 4800mAh	Sam*/sung 21700 5000mAh			
BMS	30A	30A	30A	30A			
Charge voltage	54.6V	54.6V	54.6V	54.6V			
Size (L*W*H)	368*90*111mm	368*90*111mm	367*90*127mm	367*90*127mm			
Weight	4.25kg	4.23kg	4.95kg	4.7kg			
USB Port	✓	✓	✓	✓			
Cycle Life	1000 times						
Protection Function	Over charge, Over discharge, Over current, Short circuit, Balance						
• 52V 20Ah YingWu Battery		• 48V 20Ah Voltz X Battery		• 48V 17.5Ah Rear Rack Battery			
Type	52V 20Ah	48V 20Ah		48V 17.5Ah			
Watt Hour	1040Wh	960Wh		840Wh			
Battery Cell	Sam*/sung 21700 5000mAh	Sam*/sung 21700 5000mAh		18650 2500mAh			
BMS	30A	30A		30A			
Charge voltage	58.8V	54.6V		54.6V			
Size (L*W*H)	368*95*125mm	365*109*140mm		476*165*89mm			
Weight	5kg	5.2kg		6kg			
USB Port	✗	✓ USB & Type-C Fast Charge		✓			
Cycle Life	1000 times						
Protection Function	Over charge, Over discharge, Over current, Short circuit, Balance						

**Figure 3.4:** Battery Parameters. This table provides detailed specifications for various 48V Varstrom e-bike batteries, including 13Ah, 16Ah, 19.2Ah, 20Ah bottom tube batteries, and a 17.5Ah rear rack battery. It lists watt-hour, battery cell type, BMS, charge voltage, physical size, weight, USB port availability, cycle life, and protection functions.

## 3.4. Compatibility

- **Wheel Sizes:** 20", 26", 27.5", 700C (compatible with 28" and 29" tires)
- **Fork Dropout:** 100mm Front Fork Dropout

<p><b>Mountain Bike</b></p> 	<p><b>Road Bike</b></p> 	<p><b>City Bike</b></p> 	<p><b>Folding Bike</b></p> 
<p><b>Cargo Bike</b></p> 	<p><b>Recumbent Bike</b></p> 	<p><b>Tricycle</b></p> 	<p><b>Tandem Bike</b></p> 

**VARSTROM**

- *Endless DIY Possibilities*
- *Universal Compatibility*



**Figure 3.5: Universal Compatibility.** This image displays various bicycle types, including Mountain Bike, Road Bike, City Bike, Folding Bike, Cargo Bike, Recumbent Bike, Tricycle, and Tandem Bike, illustrating the wide range of bicycles compatible with the Varstrom e-bike conversion kit.



**VARSTROM**

## Wide Application

Suitable for Various Riding Styles,  
Powering Your Every Journey



Figure 3.6: Wide Application. This collage demonstrates the Varstrom e-bike conversion kit's suitability for diverse riding styles and environments, showcasing its use on mountain bikes, city bikes, and for cargo transport.

## 4. SETUP AND INSTALLATION

This section provides general guidance for installing the Varstrom Ebike Conversion Kit. Refer to the detailed manual included in your package for specific instructions and diagrams.

### 4.1. Prepare Your Bicycle

- Ensure your bicycle's front fork has a 100mm dropout.
- Remove the existing front wheel.

### 4.2. Install the Front Hub Motor Wheel

- Carefully install the pre-laced front wheel with the hub motor into your bicycle's front fork.
- Secure the wheel using the provided nuts and washers. Ensure the motor cable exits correctly and is not pinched.
- Install your disc brake rotor or ensure V-brake compatibility.

### 4.3. Mount Components

- **Controller:** Mount the intelligent controller securely to your bike frame, typically in a battery bag or a dedicated controller box area.
- **Display:** Attach the EKD01 display to your handlebars in a visible and accessible position.
- **Throttle & Brake Levers:** Replace your existing brake levers with the provided ones (which include motor cutoff switches) and mount the thumb throttle next to the grip.
- **PAS Sensor:** Install the pedal assist sensor on your bottom bracket, ensuring the magnet disc and sensor are properly aligned and spaced.
- **Headlight:** Mount the headlight to the front of your bicycle.

#### 4.4. Wiring Connections

- Connect the motor cable to the controller.
- Connect the display, throttle, brake levers, PAS sensor, and headlight to the intelligent controller using the wiring harness. Ensure all connections are firm and correctly oriented.
- Route all cables neatly and secure them with zip ties to prevent interference with moving parts.

#### 4.5. Battery Installation (If Applicable)

- Mount the battery holder securely to your bike frame (for bottom tube batteries) or rear rack (for rear rack batteries).
- Slide the battery into its holder and lock it in place.
- Connect the battery to the controller using the XT60 connector.

### 5. OPERATING INSTRUCTIONS

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#### 5.1. Powering On/Off

- **To Power On:** Press and hold the power button on the EKD01 display for a few seconds.
- **To Power Off:** Press and hold the power button again until the display turns off.

#### 5.2. EKD01 Display Functions

The EKD01 display provides real-time riding data:

- **Speed:** Current speed (km/h or mph).
- **Battery Level:** Indication of remaining battery charge.
- **Assist Mode (PAS Level):** Shows the current level of pedal assistance (typically 0-9 levels). Use the '+' and '-' buttons to adjust.
- **Trip Data:** Displays trip distance, total distance, and other metrics.
- **Headlight Control:** Often integrated with the display for turning the headlight on/off.

#### 5.3. Pedal Assist System (PAS) and Throttle

- **PAS:** The motor provides assistance as you pedal. Increase the PAS level for more assistance.
- **Thumb Throttle:** Provides power on demand without pedaling. Use carefully, especially at higher assist levels.

#### 5.4. Speed Limiting

To quick-switch to a 25 km/h street-legal mode, press and hold the "+" and "-" buttons on the display

together.

## 5.5. BIKEGO+ App Connectivity

The EKD01 display supports connection to the "BIKEGO+ app" for detailed ride tracking, customization, and remote locking/unlocking features. Refer to the app's instructions for pairing and usage.

## 6. MAINTENANCE

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Regular maintenance ensures the longevity and safe operation of your e-bike conversion kit.

### 6.1. General Checks

- **Before Each Ride:** Check tire pressure, brake function, and ensure all quick releases/axle nuts are tight.
- **Periodically:** Inspect all electrical connections for corrosion or damage. Ensure cables are securely routed and not frayed.
- **Fasteners:** Check all bolts and screws on the motor, controller, and other components for tightness.

### 6.2. Battery Care

- **Charging:** Charge the battery fully after each ride or when the charge level is low. Use only the charger provided.
- **Storage:** If storing the battery for an extended period, charge it to 50-70% and store in a cool, dry place. Recharge every 1-2 months to prevent deep discharge.
- **Cleaning:** Keep battery contacts clean and dry.

### 6.3. Motor and Controller Care

- Keep the motor and controller clean from dirt and debris.
- While the motor is IPX5 rated, avoid submerging it in water or using high-pressure washers directly on electrical components.

### 6.4. Cleaning

Wipe down the display, motor, and controller with a damp cloth. Avoid using harsh chemicals or abrasive materials.

## 7. TROUBLESHOOTING

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This section addresses common issues. For complex problems, contact customer support.

### 7.1. No Power to Display/Motor

- **Check Battery:** Ensure the battery is fully charged and properly seated/connected.
- **Check Connections:** Verify all electrical connections, especially between the battery, controller, and display, are secure.
- **Power Button:** Ensure the power button on the display is pressed correctly.

### 7.2. Motor Not Assisting

- **PAS Sensor:** Check if the PAS sensor and magnet disc are correctly installed and aligned.

- **Brake Levers:** Ensure the brake levers are not engaged, as they cut off motor power.
- **Display Error Codes:** Check the EKD01 display for any error codes and consult the detailed manual for their meaning.
- **Throttle:** If using the throttle, ensure it is functioning and connected.

### 7.3. Inaccurate Speed Reading

- **Wheel Size Setting:** Verify the correct wheel size is set in the EKD01 display settings.
- **Speed Sensor:** Check the speed sensor (if external) and its magnet for proper alignment.

## 8. SPECIFICATIONS

Feature	Specification
Brand	Varstrom
Model Number	FM 125EVH.48.500.100
Motor Type	Front Hub Gear Drive Brushless Motor
Rated Power	500W
Rated Voltage	48V
Peak Power	800W
Max Torque	65N·m
Max Speed	40-45 km/h
Front Dropout Size	100mm
Wheel Size Compatibility	20", 26", 27.5", 700C (28"/29" compatible)
Brake Type Compatibility	Disc, V Brake
Noise Grade	<60dB
Waterproofing	Motor: IPX5, Display: IP67
Display	EKD01 2.4" TFT Display
Battery Options (48V)	13Ah, 16Ah, 20Ah (bottom tube); 17.5Ah (rear rack)
Included Components	Motor Wheel, Controller, PAS Sensor, Thumb Throttle, Brake Levers, EKD01 Display, Headlight, Battery (Optional)
Assembly Required	Yes

## 9. WARRANTY AND SUPPORT

## 9.1. Warranty Information

This Varstrom Ebike Conversion Kit comes with the following warranty:

- **Return Policy:** 30 days from the date of purchase.
- **Repair or Replace:** 365 days from the date of purchase for manufacturing defects.

Please retain your proof of purchase for warranty claims.

## 9.2. Customer Support

For technical assistance, troubleshooting beyond this manual, or warranty claims, please contact Varstrom customer support through the retailer where you purchased the product or visit the official Varstrom website for contact details.