NOVAK

NovaLinK™

M2 DIG

INSTRUCTION MANUAL

Version 1.0
12/15/2010

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PRODUCT OVERVIEW

The NovaLink™ provides users with expanded programming adjustability. It comprises a unique module that easily plugs into the speed control and an included USB cord. Using the integrated software disk, customers can fine tune the ESC's multiple parameters by inputting the desired values or using the user-friendly graphic controls. Additionally, each personalized set of parameters can be stored on a PC to recall and use again later. These custom-made parameter sets can, also, be shared with other drivers. The NovaLink will never be outdated due to the easy-to-download software updates available to users on Novak's Web site. The NovaLink is compatible with Windows® XP™, Vista™, and 7™ computer-operating platforms.

ITEMS INCLUDED

1. NovaLink USB Adaptor Module
2. USB Cable
3. NovaLink Software Disk
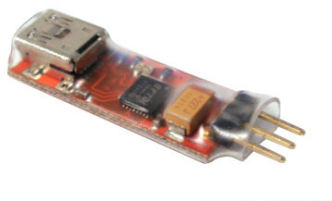
MINIMUM SYSTEM REQUIREMENTS

Please ensure that the computer you plan to install NovaLink on meets the following minimum requirements

Operating System	Windows® XP ™ 32-bit, Vista ™ 32-bit, 7 ™ 32-bit The NovaLink is not compatible with 64-bit operating systems
Memory	512 RAM
CPU	1 GHz Processor
Disk	100 MB Disk
Graphics	VGA Card (800x600 minimum resolution recommended)

⚠️ The NovaLink uses a period (.) as the standard decimal separator. This software will not run if a comma (,) is used instead. *(Some European countries use the comma as the standard decimal separator, whereas the US and English countries use the period).*

PRECAUTIONS

Check for Firmware Updates!
It is important to make sure you have the latest ESC firmware. (Refer to the "**ESC Firmware Upgrade**" section of this manual).

Check for Software Updates!
It is important to make sure you have the latest NovaLink software updates. (Refer to the "**Downloading Software Updates**" section of this manual).

Always Unplug the ESC Fan Before Running NovaLink or Firmware Update!
Please remember to always unplug the ESC fan before using NovaLink or ESC Firmware Upgrade. Leaving the fan plugged in will result in excess current draw that may disable the USB port and electrical noise generated by the fan may interfere with communication.

### Water and Electronics Don't Mix!
Never allow water, moisture or other foreign materials to get inside the speed controller or the NovaLink. Water damage will void the product warranty!

Do NOT put the NovaLink pins close to other metal objects!
Putting the metal pins against another metal object can result in shorting the NovaLink circuit. This damage is not covered under the product's warranty.

Plug the ESC into the NovaLink Correctly and Carefully!
The metal pins on the NovaLink can be damaged easily if the ESC is not plugged into the Novalink carefully. The pins are marked with "White" and "Black" labels to aid in connecting your ESC correctly. Make sure to match the labels on the NovaLink module with the color of the wires on the ESC as shown in the image to the right.

White

Black
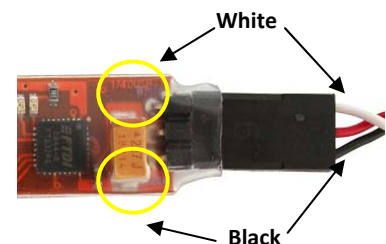
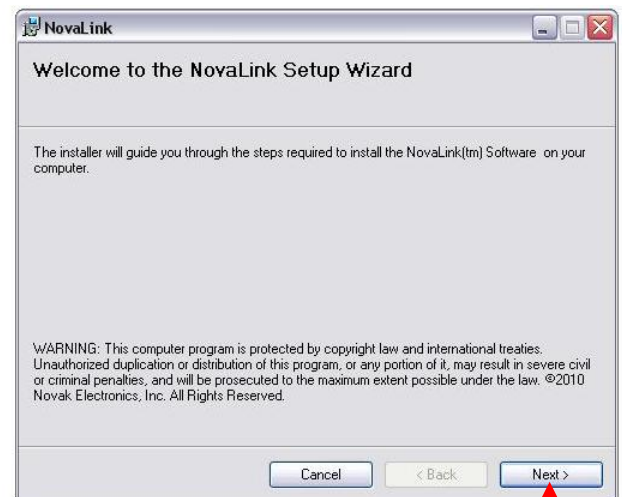# SOFTWARE INSTALLATION

1. Insert the NovaLink CD

Start Screen

- **Windows XP**: If AutoRun is enabled on your computer, the NovaLink Start Screen will automatically open in your browser.
- **Windows Vista & 7**: An AutoPlay options window will usually be displayed. Click "**Run NovaLink_Startup.html**"

❖ If the Start Screen does not display when the CD is inserted, navigate to **My Computer** -> right-click "**NovaLink**" -> select "**Open**" -> double-click **NovaLink_Startup.html**

Software Install

1. Click **Start** -> **My Computer** (or 🪟 -> **Computer**)
2. Double-click the **NovaLink** icon
3. Double-click the **Drivers** folder
4. Install the drivers
   a. **Windows XP**: double-click the file "**NovaLink_Drivers**"
   b. **Windows Vista & 7**: right-click "**NovaLink_Drivers**" and click "**Run as Administrator**"
      i. A black command prompt will pop up during installation
5. Once the black command prompt disappears, plug the NovaLink into the USB
6. Return back to the NovaLink Setup folder by clicking the "Back" button
7. Double-click the **Installer** folder
8. Install NovaLink by double-clicking on the **Setup.exe** file

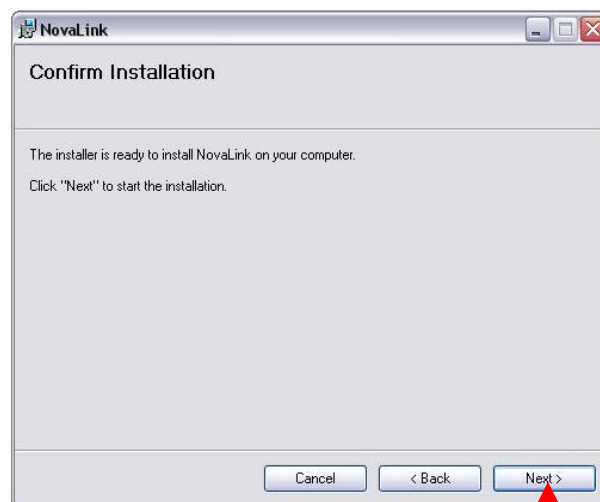Click "Next" to begin the NovaLink Setup Wizard

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The default installation folder is "C:\Program Files\Novak Electronics\NovaLink_M2Dig\". To change the installation folder, type in the folder path or click "Browse" to select a folder

Click "Next" to continue with the installation

Click "Next" to begin installation

Software Registration

After installation, you can register your software by clicking "**Register Now**" or if you plan to skip registration, click "**Next**".

The registration form can be found by navigating to

Start -> **All Programs -> Novak Electronics**.

Registering your NovaLink will ensure that you receive e-mails from Novak when new versions of the software or firmware are available.
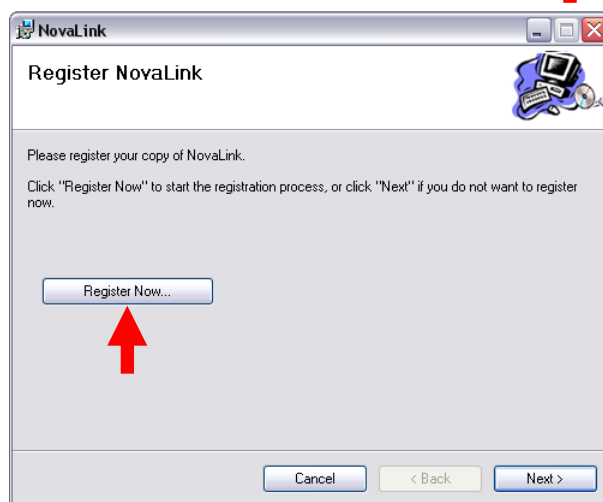
Once the installation is complete, click "Close" to exit the installation wizard

NOVALINK INSTRUCTIONS
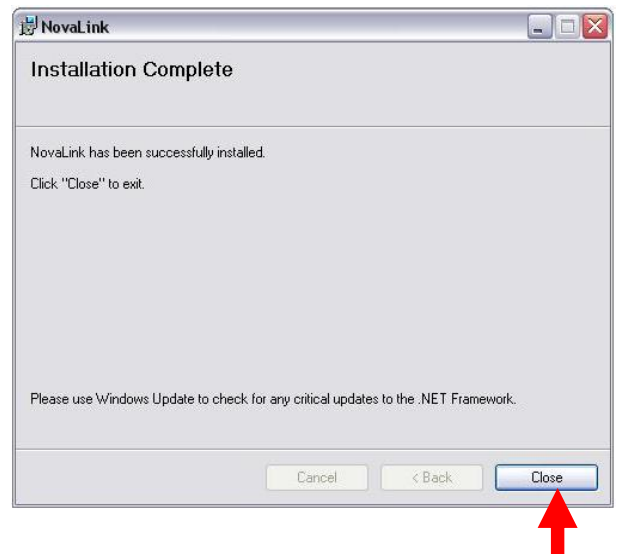
Startup

> ⚠️ Always unplug the *ESC fan* **AND** *battery* before running NovaLink or the ESC Firmware Upgrade! (refer to **Precautions** for details)

Figure 1

1. Make sure to have your USB cable, NovaLink USB Adaptor, and ESC ready
2. Plug the USB cable into your computer's USB port
3. Plug the NovaLink adapter into the USB cable

> **NOTE: Make sure you unplug both input harnesses before starting the NovaLink software!**

4. **Unplug the two input harnesses from your receiver** (Figure 1)
5. **Unplug the ESC fan & battery**
6. Plug the throttle harness into the NovaLink adapter (Figure 2)
7. Start the NovaLink program
8. If you are ready to upload and configure your ESC settings, refer to the **Uploading /Updating a Profile** section
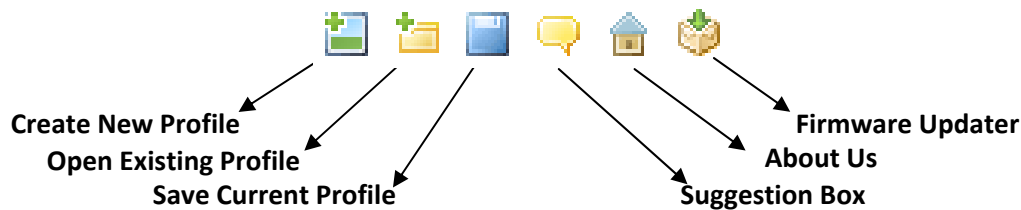

Figure 2

Any time One-Touch programming is performed, the speed controller will automatically revert back to factory-default settings. The only exception is when the Timing settings are programmed via the NovaLink. These settings are kept in the ESC's non-volatile memory and when you connect the ESC to the NovaLink, the following values will be uploaded from the ESC non-volatile memory:

- Timing Set Point
- Max Timing RPM
- Timing Level
- Boost Mode
- Boost Delay

When the ESC is powered up it goes through the following sequence:

1. All five LEDs light up during an internal test cycle.
2. **Blue** and **green** LEDs light up while the ESC is looking for the NovaLink. During this time, it is sending out messages through the input harness and is expecting a return message from the NovaLink. If no messages are received by the ESC, it times out.
3. **Red** and **yellow** LEDs blink twice to indicate Li-poly mode.
4. If the ESC is connected to a receiver and the signal is present, the **red**, **yellow** and **blue** LEDs light up to indicate that the Neutral PPM signal is present and the Drag brake is enabled (if Timing is enable, the **white** LED will also light up).
5. If no signal is present, the **red** and **green** LEDs will light up.

MENU ICONS

Create New Profile

Open Existing Profile

Save Current Profile

Suggestion Box

Firmware Updater

About Us

Creating & Saving a Profile

1. Click the **Create New Profile** icon on the menu bar
2. Adjust settings (refer to "**NovaLink Parameter Definitions**")
3. Click the **Save Current Profile** icon on the menu bar
4. Choose a location to save the current profile
5. Type in next to **File Name** the name you would like to name this profile
6. Click **Save** (all parameters on both the "Settings" and "Advanced" tabs are saved)
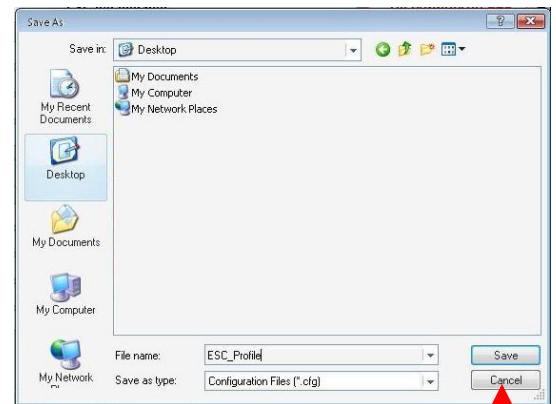
> NOTE: You do NOT need to have your ESC connected to create and save a profile

Uploading/Updating a Profile

1. Adjust settings *(refer to "**NovaLink Parameter Definitions**")*
2. Click **Update** to update your ESC's settings (your ESC will not be updated when you press **Save**)
   (Your NovaLink interface will disconnect and reconnect your ESC during this process)
   a. Do NOT disconnect your ESC while it is updating
      *(refer to **Disconnecting Your ESC**)*
3. When the NovaLink screen re-appears, the updated profile has been successfully saved to the ESC

## Resetting to Default Settings

1. Click **Reset** in the top right corner of the interface
2. Resetting your profile will change all your parameters back to its default values
3. If you plan on using these defaults for your ESC, do not forget to update your ESC (refer to "**Uploading/Updating a Profile**")

Sharing Profiles

NovaLink allows users to share profiles by providing a feature to open existing profiles. After receiving files from other users, you can then upload them onto NovaLink to view the parameters and use them on your own ESC.

1. Click the **Open Exiting Profile** icon
2. Select the profile you would like to open (.cfg)
3. Click **Open**
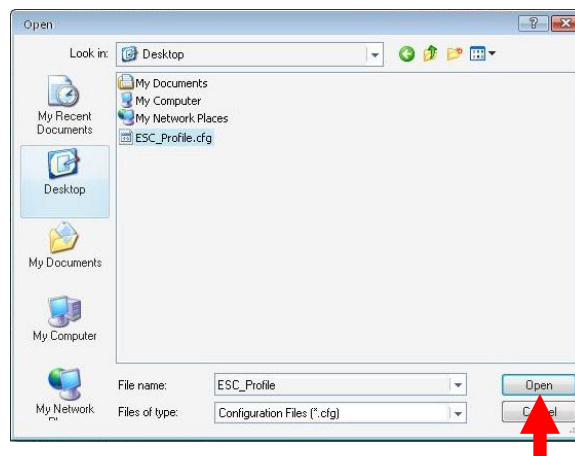
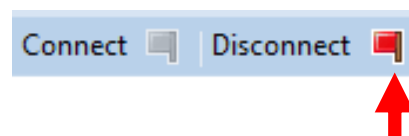## Disconnecting Your ESC

1. Click the Disconnect flag in the top toolbar

2. Remove your ESC when **Disconnected** is shown

   or

1. Close the program
2. Remove your ESC

Downloading Software Updates

Please visit http:// www.teamnovak.com/products/esc/m2 regularly for software updates. If you have registered your NovaLink, we will notify you by e-mail when updates are available.

ESC FIRMWARE UPGRADE

It is important to keep your ESC firmware up to date. Visit www.teamnovak.com to check for new ESC firmware upgrades. If your ESC firmware is ready for an upgrade, please follow these instructions on how to upload the new firmware file and update your ESC:

1. Navigate to http://www.teamnovak.com/download/ESCFirmware
2. Download the M2 Dig Firmware zip file
3. Open the zip file
4. Double-click the EXE file
5. Unplug your ESC from the NovaLink (if attached)

Note: make sure your ESC fan is unplugged

6. Start **NovaLink**
7. Click the **Firmware Updater** icon
8. The NovaLink Firmware Updater will now be launched
9. Click **Update**
10. Your ESC will now begin to update. When "**ESC is now updated**" is shown, you may exit the application and unplug your ESC

Do **NOT** disconnect your ESC from the NovaLink while the firmware is updating. Your ESC will not be able to function if this occurs. Restart the Firmware Updater and allow your ESC to fully update if your ESC disconnects during the firmware update.
(Refer to "**Troubleshooting**" for details)

NovaLink Parameter Definitions

Settings Tab

Dig Power - Dig Power is the amount of braking or dig power being applied to lock either the front or rear motor.
- This setting is measured as a percentage of full brakes. Preset selections are available in the drop down menu. Custom values can entered in increments of 0.1%*.
- Increasing the Dig Power applies more braking power to the motor that the Dig function is telling to lock. By locking either the front of rear motor, the vehicle is able to perform a "Dig" maneuver than can allow you to navigate around obstacles or perform a tighter turning radius by dragging the rear wheels.
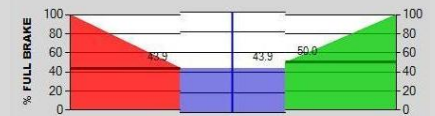
You must select "Enter" for the software to recognize the custom value.

Drag/Hill Brake - Drag/Hill Brake is the amount of brake applied while the transmitter is at neutral. It is also known as "coast brakes."
- This setting is measured as a percentage of full brakes. Preset selections are available in the drop down menu. Custom values can entered in increments of 0.1%*.
- Increasing the Drag/Hill Brake setting makes the motor slow the vehicle down more. You can adjust this setting to give the vehicle the desired amount of creep down the incline when the transmitter's trigger is released.
- Drag/Hill Brake is featured in blue in the chart below. You can graphically control the Drag/Hill Brake value by grabbing the bold horizontal line in the blue section with your cursor and dragging it up or down. This will also adjust the Minimum Brake value if the Independent Drag Brake feature is set to "Off".

You must select "Enter" for the software to recognize the custom value.

Dead Band - Dead Band is the trigger space between Minimum Brake and Minimum Drive, with neutral in the middle.

- This setting is measured as a percentage of full throttle. Ten preset selections are available in the drop down menu. Custom values can be entered in increments of 0.1%*

- Raising the Dead Band setting increases the amount of free play, or distance you must move your transmitters trigger before forward drive or braking activates. This setting is useful if your transmitters trigger does not center well or the trigger pot is worn.

- The width of the blue section in the chart below represents the Dead Band.

* You must select "Enter" for the software to recognize the custom value.

Drive Frequency	-	This setting controls how the speed control's throttle (or forward drive) responds to the transmitter's trigger input. Drive Frequency is the frequency at which the information is being sent from the ESC to the motor (how many times per second the motor is being cycled on and off to control its speed). Changing the Drive Frequency setting can be a valuable tuning asset for different types of motors.
	-	This setting is measured in kHz. Preset selections are available in the drop down menu. This parameter does not allow custom values to be entered.
	-	Increasing the Drive Frequency setting will require more initial trigger movement to obtain a given amount of forward drive. This will make the throttle feel smoother and more controllable under initial drive.

Minimum Drive	-	Minimum Drive is the amount of forward drive applied with the first pulse of transmitter throttle information.
	-	This setting is measured as a percentage of full throttle. Preset selections are available in the drop down menu. Custom values can entered in increments of 0.1%.
	-	Increasing the Minimum Drive setting starts the forward drive at a stronger/higher level, causing the vehicle to take off more aggressively from neutral. This is useful to compensate for heavier vehicles to minimize the amount of trigger throw required before effective drive is applied.
	-	Minimum Drive is featured in green in the chart below. You can graphically control the Minimum Drive value by grabbing the bold horizontal line in the green section with your cursor and dragging it up or down.
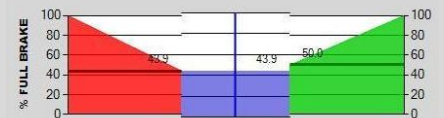
*You must select "Enter" for the software to recognize the custom value.

| **Voltage Cut-Off** | - | The Voltage Cut-Off setting enables or disables the speed control's Smart-Stop Voltage Cut-Off Circuitry and allows for the selection of the type of batteries used in the vehicle's main battery pack. The Novak Smart-Stop Circuitry monitors battery voltage and folds back power output to the motor when a critical voltage threshold is reached for either LiPo or LiFe cells. Cutting off the power at the critical threshold protects these batteries from being over-discharged and damaged. |

- This feature auto-selects the correct voltage cut-off value for the number of cells in the main battery pack once the correct battery type is selected.

WARNING: ALWAYS USE VOLTAGE CUT-OFF WITH LiPo AND LiFe BATTERY PACKS. IF VOLTATGE CUT-OFF CIRCUITRY IS TURNED OFF AND BATTERIES ARE ALLOWED TO DISCHARGE BELOW THE CELL'S CRITICAL VOLTAGE, BATTERIES WILL BE DAMAGED.

Note: This feature is not accessible when the speed control is disconnected.

Operation Mode

Dig Mode

Default setting. When the transmitter's AUX/3rd switch/dial is thrown, the dig function for either the front or rear motor (depending on the switch position) will be engaged, and the ESC applies Dig Power (independent of Drag Brake) to lock the motor. This mode requires a 3-channel transmitter with either a proportional AUX/3rd channel switch or a simple three-position switch to operate.

Proportional Dig Mode

In this mode, for any given partial throttle position, the percentage of drive power applied to the affected motor is reduced as the position of the AUX/3rd channel increases, while the other motor receives its full amount of drive. When the AUX/3rd channel nears full throw, the preset Dig Power is applied to lock the affected motor. This mode requires a 3-channel transmitter with a proportional-style AUX/3rd channel switch or control similar to a dial or a knob.

Single Output Mode

This mode is used for standard 2-channel operation with either single or dual-motor control. There is no dig function in this profile.

COMMENTS & SUGGESTIONS

Team Novak welcomes all suggestions and comments! Feel free to send us any suggestions or bugs you may have encountered through our **Suggestions** form.

1. Start **NovaLink**
2. Click the **Suggestions Box** icon 💬
3. Enter any suggestions, comments, or bugs into the text field
4. Click **Send**
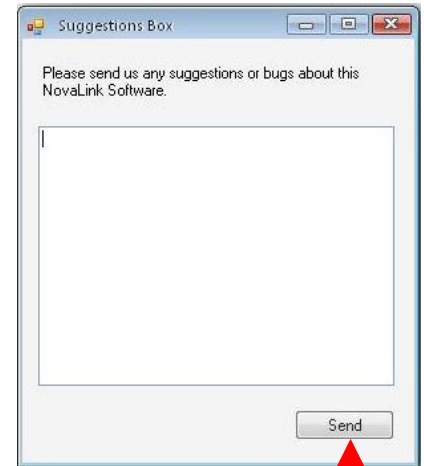
TROUBLESHOOTING

ESC Disconnected During Firmware Update

1. Close the NovaLink Firmware Updater
2. Plug your ESC into the NovaLink Adaptor
3. Start the NovaLink Firmware Updater from the NovaLink program
4. Make sure your ESC fully updates

NovaLink Not Displaying Properly on Windows 7

1. ⊞ -> **Control Panel** -> **Display**
2. Change the setting to "**Smaller-100%**"
3. Click **Apply**

NovaLink Firmware Updater Displays Error Message

If the Firmware Updater displays a popup saying "**File does not exist. Make sure image is in the C:\Program Files\Novak Electronics\NovaLink folder**," you need to download and save the firmware file into the NovaLink folder. Refer to "**ESC Firmware Upgrade**" for instructions on how to save the firmware file.

PRODUCT WARRANTY

The NovaLink PC Interface software is guaranteed to be free from defects in materials or workmanship for a period of 120 days from the original date of purchase (verified by dated, itemized sales receipt). Warranty does not cover incorrect installation, components worn by use, damage to the circuit board or from excessive force or tampering with the internal electronics, exposing electronics to water, moisture, or any other foreign material, allowing exposed wiring to short-circuit, or any damage caused by a crash, flood, or other natural disaster.

Because Novak Electronics, Inc. has no control over the connection and use of the NovaLink Interface and software or any other related electronics, no liability may be assumed, nor will be accepted, for any damage resulting from the use of this product. Every Novak NovaLink PC Interface is thoroughly tested before leaving our facility and is, therefore, considered operational.

By the act of connecting/operating the NovaLink PC Interface, user accepts all resulting liability. In no case shall our liability exceed the product's original cost. We reserve the right to modify warranty provisions without notice.

This product is not intended for use by children under 14 years of age without the strict supervision of an adult. Use of this product in an uncontrolled manner may result in physical damage or injuries—take extra care when operating any remote control vehicle.

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