



DS-TD10M-1
Multi-Target Speed-Measuring Radar

User Debugging Manual

© 2019 Hangzhou Hikvision Digital Technology Co., Ltd. All rights reserved.

ALL RIGHTS RESERVED.

This Manual is the property of Hangzhou Hikvision Digital Technology Co., Ltd. or its affiliates (hereinafter referred to as “Hikvision”), and it cannot be reproduced, changed, translated, or distributed, partially or wholly, by any means, without the prior written permission of Hikvision. Unless otherwise expressly stated herein, Hikvision does not make any warranties, guarantees or representations, express or implied, regarding to the Manual, any information contained herein.

About this Manual

The Manual includes instructions for using and managing the Product. Pictures, charts, images and all other information hereinafter are for description and explanation only. The information contained in the Manual is subject to change, without notice, due to firmware updates or other reasons. Please find the latest version of this Manual at the Hikvision website (<https://www.hikvision.com/en/>).

Please use this Manual with the guidance and assistance of professionals trained in supporting the Product.

Trademarks Acknowledgement

- **HIKVISION** and other Hikvision’s trademarks and logos are the properties of Hikvision in various jurisdictions.
- Other trademarks and logos mentioned are the properties of their respective owners.

Legal Disclaimer

- TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, THIS MANUAL AND THE PRODUCT DESCRIBED, WITH ITS HARDWARE, SOFTWARE AND FIRMWARE, ARE PROVIDED “AS IS” AND “WITH ALL FAULTS AND ERRORS”. HIKVISION MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY, SATISFACTORY QUALITY, OR FITNESS FOR A PARTICULAR PURPOSE. THE USE OF THE PRODUCT BY YOU IS AT YOUR OWN RISK. IN NO EVENT WILL HIKVISION BE LIABLE TO YOU FOR ANY SPECIAL, CONSEQUENTIAL, INCIDENTAL, OR INDIRECT DAMAGES, INCLUDING, AMONG OTHERS, DAMAGES FOR LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION, OR LOSS OF DATA, CORRUPTION OF SYSTEMS, OR LOSS OF DOCUMENTATION, WHETHER BASED ON BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE), PRODUCT LIABILITY, OR OTHERWISE, IN CONNECTION WITH THE USE OF THE PRODUCT, EVEN IF HIKVISION HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES OR LOSS.
- YOU ACKNOWLEDGE THAT THE NATURE OF INTERNET PROVIDES FOR INHERENT SECURITY RISKS, AND HIKVISION SHALL NOT TAKE ANY RESPONSIBILITIES FOR ABNORMAL OPERATION, PRIVACY LEAKAGE OR OTHER DAMAGES RESULTING FROM CYBER-ATTACK, HACKER ATTACK, VIRUS INSPECTION, OR OTHER INTERNET SECURITY RISKS; HOWEVER, HIKVISION WILL PROVIDE TIMELY TECHNICAL SUPPORT IF REQUIRED.
- YOU AGREE TO USE THIS PRODUCT IN COMPLIANCE WITH ALL APPLICABLE LAWS, AND YOU ARE SOLELY RESPONSIBLE FOR ENSURING THAT YOUR USE CONFORMS TO THE APPLICABLE LAW. ESPECIALLY, YOU ARE RESPONSIBLE, FOR USING THIS PRODUCT IN A MANNER THAT DOES NOT INFRINGE ON THE RIGHTS OF THIRD PARTIES, INCLUDING WITHOUT LIMITATION, RIGHTS OF PUBLICITY, INTELLECTUAL PROPERTY RIGHTS, OR DATA PROTECTION AND OTHER PRIVACY RIGHTS. YOU SHALL NOT USE THIS PRODUCT FOR ANY PROHIBITED END-USES,

INCLUDING THE DEVELOPMENT OR PRODUCTION OF WEAPONS OF MASS DESTRUCTION, THE DEVELOPMENT OR PRODUCTION OF CHEMICAL OR BIOLOGICAL WEAPONS, ANY ACTIVITIES IN THE CONTEXT RELATED TO ANY NUCLEAR EXPLOSIVE OR UNSAFE NUCLEAR FUEL-CYCLE, OR IN SUPPORT OF HUMAN RIGHTS ABUSES.

- IN THE EVENT OF ANY CONFLICTS BETWEEN THIS MANUAL AND THE APPLICABLE LAW, THE LATER PREVAILS.

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
 NOTE	Provides additional information to emphasize or supplement important points of the main text.
 WARNING	Indicates a potentially hazardous situation, which if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results.
 DANGER	Indicates a hazard with a high level of risk, which if not avoided, will result in death or serious injury.

TABLE OF CONTENTS

Chapter 1 Radar Installation	4
1.1 Installation Parameters	4
1.2 Install Radar	4
1.3 Wire Radar	5
Chapter 2 Operation via Radar Debugging Software	7
2.1 Overview	7
2.2 Running Environment.....	7
2.3 Install Software.....	7
2.4 Operate via Software.....	8
2.4.1 Connect Radar	11
2.4.2 Debug Radar	12
Chapter 3 FAQ	14

Chapter 1 Radar Installation

DS-TD10M-1 radar is usually installed in the middle position of gantry and L-shaped pole, as shown in Figure 1-1.

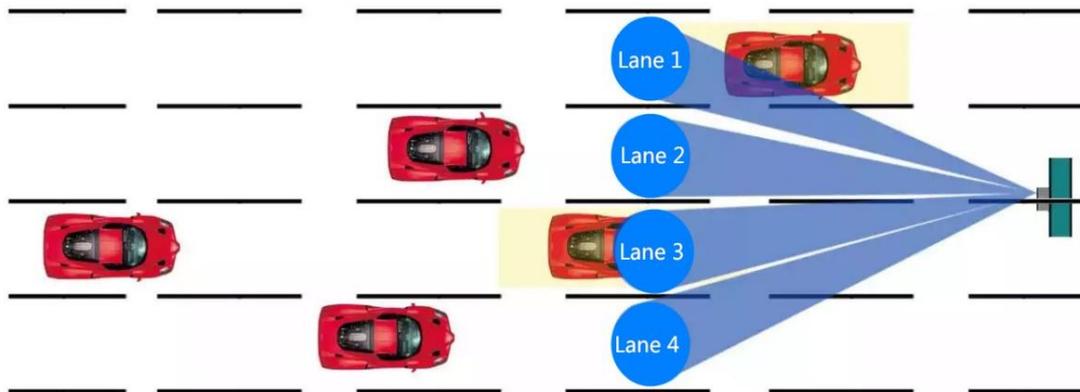


Figure 1-1 Radar Installation

1.1 Installation Parameters

- Installation height: 6 m
- Downtilt: 10°
- Trigger distance: 28 m

1.2 Install Radar

The radar installation angle is determined by the scale (10°) on the DS-TD10M-1 radar mount.

Steps:

1. Fix the radar on the gantry or crossbar with hoop.
2. Connect radar to the debugging software.
3. Check the actual track of passing vehicle to adjust the downtilt of the radar.
4. Observe the moving track of target to confirm the most appropriate trigger distance, which should be set at the middle position of track.
5. Fasten the radar adjustment screws after the angle is set.



Figure 1-2 Radar Installation Angle

1.3 Wire Radar

WARNING

The radar is powered by 12 VDC, and it will be burnt if powered by 220 VAC.

- The radar and capture camera communicate via RS-485 serial port with 3 signal lines, among which the blue one indicates D+, yellow indicates D-, and green indicates DGND. The radar should be connected to the camera based on identifiers. Set the radar baud rate as 115200 when connecting the radar with camera.
- Use USB to RS-485 switch line or USB to RS-232 switch line and RS-232 to RS-485 conversion module to connect the radar to the computer. Generally, the DB9 header of RS-485 serial port defines pin 1 as D+, pin 2 as D-, and pin 5 as GND. All the 3 lines should be connected properly, as shown in Figure 1-3.

NOTE

The radar outputs signal via RS-485 serial line. Connecting with RS-232 serial line will not work out.

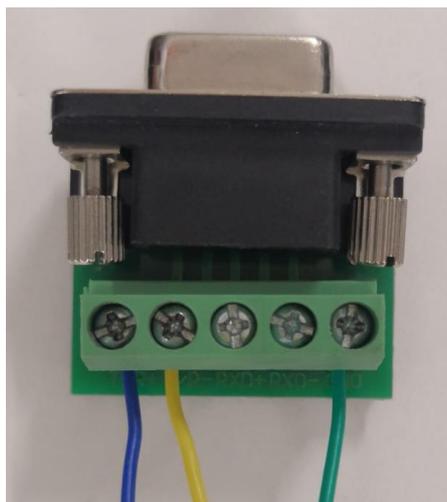


Figure 1-3 RS-485 DB9 Header Connection

Chapter 2 Operation via Radar Debugging Software

2.1 Overview

This software is the debugging software for DS-TD10M-1 radar. It is used to configure parameters of the radar for installation, debugging, and troubleshooting. The software installation package is included in the product CD.

2.2 Running Environment

- Software environment: It is applicable to Windows XP\Vista\7\8. Install Microsoft.NET Framework4.0 or above version (the kit is included in the installation package) to the computer. It is recommended to use 64-bit version of windows 7.
- Hardware environment: It is required that the computer should be equipped with 2.0 GHz CPU, 2 GB memory, and 1 GB video memory. It is recommended to use a separate graphics card for better display results.

2.3 Install Software

Steps:

1. Double click the setup.exe file in the installation package.



NOTE

If Microsoft.NET Framework does not exist in the computer, it will be installed automatically.

2. Install the debugging software according to the installation wizard, as shown in Figure 2-1.

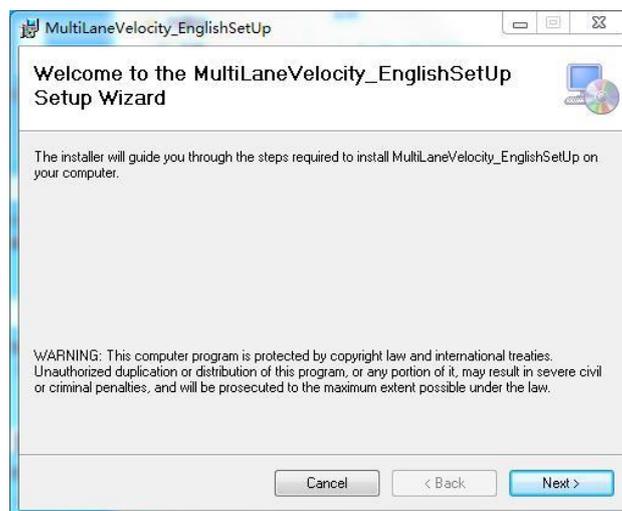


Figure 2-1 Installation Wizard

3. Click **Next** and then select an installation path, as shown in Figure 2-2.

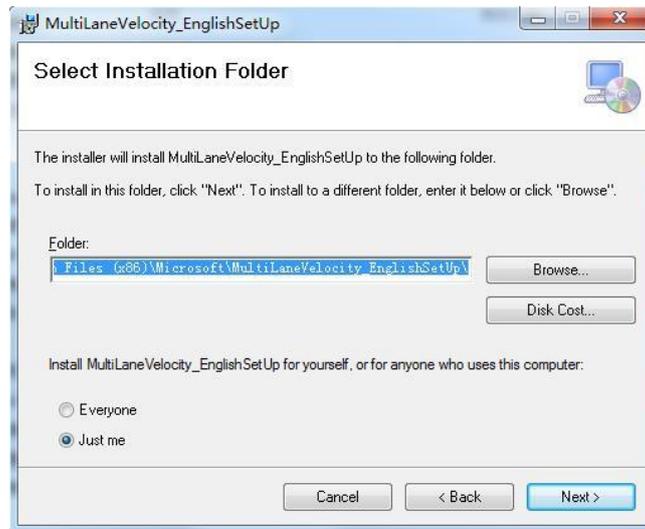


Figure 2-2 Select Installation Path

4. Click **Next** to continue. The setup wizard will complete the software installation automatically, as shown in Figure 2-3.

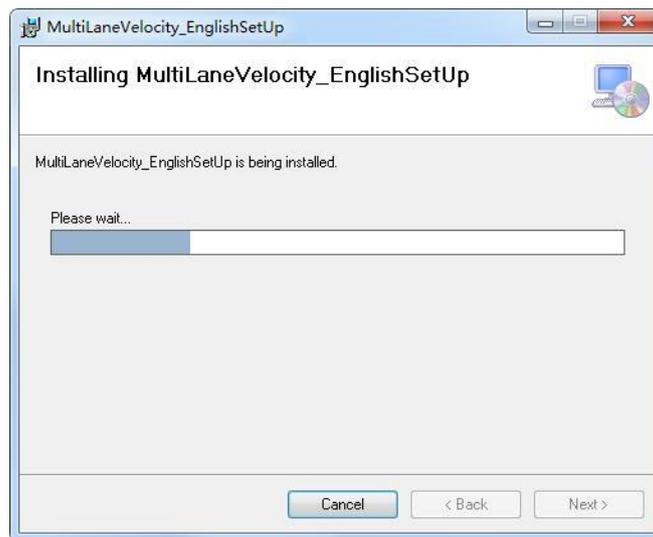


Figure 2-3 Install Software

5. Click **OK**, and a shortcut named *MultiLaneVelocity.exe* will be generated on the Windows desktop.
6. Double click the shortcut icon to run it.

2.4 Operate via Software

Before you start:

Connect the radar to the computer properly.

There are three working modes of the software: debug mode, test velocity mode, and measure mode. Switch the radar to different working modes via the software.

The software enters the interface as shown in Figure 2-4 after running.

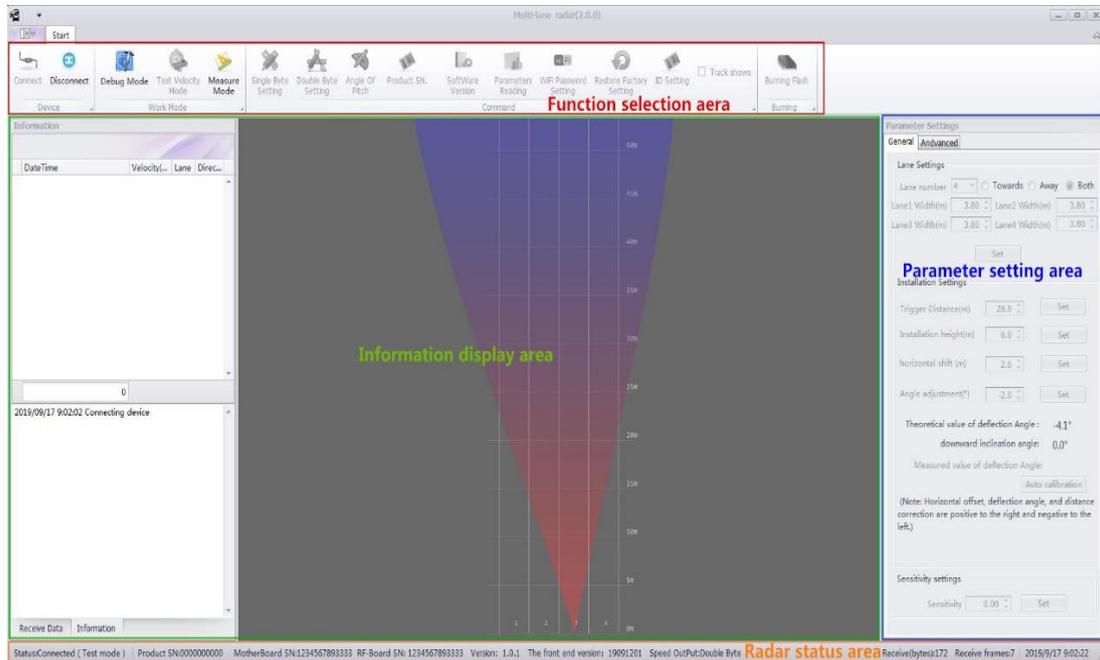


Figure 2-4 Debugging Software Interface

The interface contains **Function Selection Area**, **Information Display Area**, **Parameter Setting Area**, and **Radar Status Area**.

- **Function Selection Area** includes multiple functions to choose, such as device connection, debug mode, parameters reading and burning flash. Specific definitions are as follows.
 - **Device Connection:** Click **Connect** and select a communication mode to enable the communication between software and radar.
 - **Device Disconnection:** Click **Disconnect** to disable the communication between software and radar.
 - **Debug Mode:** Only in this mode can radar parameters and WiFi password be edited.
 - **Test Velocity Mode:** The normal mode of speed detection. In this mode, parameters setting and reading are not allowed.
 - **Measure Mode:** Measure mode is only required for measuring detection.
 - **Single Byte Setting:** If the detection speed is lower than 255 km/h, select single byte setting.
 - **Double Byte Setting:** If the detection speed is higher than 255 km/h, select double byte setting.
 - **Angle of Pitch:** Read and view the pitch angle of radar.
 - **Product SN.:** Read and view the serial number of radar product.
 - **Software Version:** Read and view the current radar version.

- **Parameters Reading:** Read the current road information and installation parameters.
- **WiFi Password Setting:** Edit the current WiFi password connected to the radar.
- **Restore Factory Setting:** Restore the parameters and road information to default status.
- **ID Setting:** Set different frequency points to avoid mutual interference.
- **Track Shows:** Show the real-time moving track of target when selected.
- **Burning Flash:** When the radar does not connect to the debugging software, click Burning Flash to upgrade the current version of software.
- **Information Display Area** displays the detection speed, lane information, direction and real-time picture simulation of the current target.
- **Parameter Setting Area** contains **General Settings** and **Advanced Settings**. Lane Setting, Installation Setting and Sensitivity Setting can be configured in this area.
 - **General Settings**
 - **Lane Setting:** No more than 4 lanes is allowed. Three direction modes (Towards, Away and Both) can be selected. The Lane Width should be set in accordance with actual road width.
 - **Trigger Distance:** The radar will report the speed information of target which arrives at this position.
 - **Installation Height:** Set in accordance with actual installation height.
 - **Horizontal Shift:** Set in accordance with the deviation of the radar to the horizontal center.
 - **Angle Adjustment:** Make adjustments based on the target moving track detected by the radar.
 - **Sensitivity Setting:** The detection sensitivity of radar. The higher the value is, the lower the sensitivity will be.
 - **Advanced Settings**

The debugging software can be switched to the advanced setting interface only in debug mode. In this interface, the velocity correction value and the trigger distance correction value of each lane can be set, as shown in Figure 2-5.

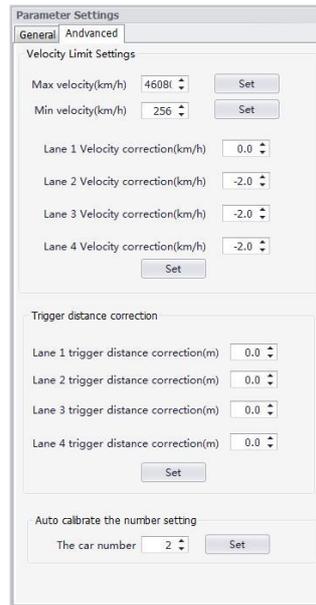


Figure 2-5 Advanced Settings Interface

- **Radar Status Area** displays the current status of radar, including software version, product serial number and current setting parameters.

2.4.1 Connect Radar

Steps:

1. Select **Device Connect**, and the connection setting dialog box will pop up. As shown in Figure 2-6, there are two connection methods: **WIFI connection** and **Serial connection**.

NOTE

The initial default connection method is serial connection. All available serial ports of the device will be listed and the user can select the port number to connect device through the drop-down list box.

2. Select **Baud** as 115200, **Data** as 8, **Stop** as 1, and **Parity** as none.
3. Click **OK**.

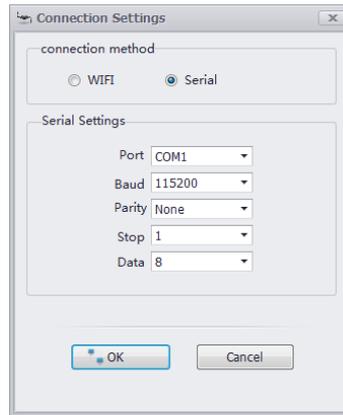


Figure 2-6 Device Connection Settings

4. (Optional) You can also select the connection method as WiFi connection. The computer must have been connected to the radar via WiFi in advance. Click **OK** and the device will connect automatically.

During the device connection process, the software will automatically read the software version, device number and current setting parameters. These parameters will be displayed in the **Radar Status Area** at the bottom of the interface.

NOTE

The name of radar is defined as RAD + 11-digit serial No., and the original password is RADAR2019.

2.4.2 Debug Radar

After road information (number of lanes and lane width) and installation parameters (trigger distance and installation height) are set, view the real-time vehicle status displaying window to check whether the vehicle is in the corresponding lane or not. Set the angle correction and horizontal shift as required to ensure that the target vehicle is in the corresponding lane.

The above parameters should be set according to the actual installation conditions. The horizontal shift value is negative to the left and positive to the right, and the positive center of all lanes are set as the value of 0. If the radar is installed at the left lane, set the horizontal shift as a negative value (the deviation value of distance from the center of all lanes). If the radar is installed at the right lane, set the horizontal shift as a positive value, as shown in Figure 2-7.

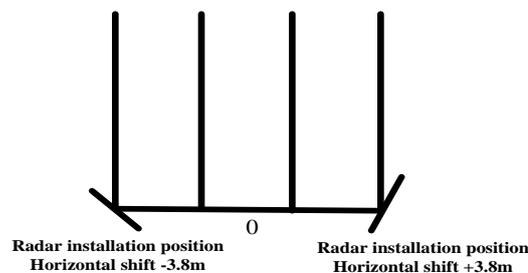


Figure 2-7 Horizontal Shift Settings

Firstly, the moving track should be straight and the initial appearance distance should be greater than the trigger distance. Otherwise, some of the targets will be undetectable.

For instance, if the trigger distance of Towards Direction is set as 28 meters, the appearance distance should be set as about 35 meters.

Secondly, it is necessary to ensure that the detected lane corresponds to the actual lane. Otherwise the lane number will be inconsistent with the data reported. Adjust the value of pitch offset based on the moving track shift.

After debugging, click **Measure Mode** and the radar will run normally.

Chapter 3 FAQ

- **Connecting to software failed.**

- Check whether the computer has been installed a serial port driver, and then view the port number in device management module.
- If the radar is connected to the software, the serial port parameters are set as follows: baud rate 115200, data bit 8, stop bit 1, parity none.
- Connect radar cables to RS-485 serial port, with the blue one connects to pin 1 of DB9, the yellow one connects to pin 2 and the green one connects to pin 5.

- **Detecting targets failed.**

- Check radar parameters and adjust the pitch angle to enable the radar beam to cover the trigger position.

For instance, if the trigger distance is set as 28 meters but the pitch angle is over downward, then only area within 20 meters can be covered. In this case, the radar won't be triggered when a vehicle passing through the set position. Adjust the pitch angle to make it cover a range of 28 meters.

- Check camera RS-485 serial port, baud rate, radar type, and other parameters. It is recommended to use USB with UT891 or UT890 chip to RS-485 switch line, which is user friendly and boasts of a low bit error rate.



See Far, Go Further