

1. Software Operation

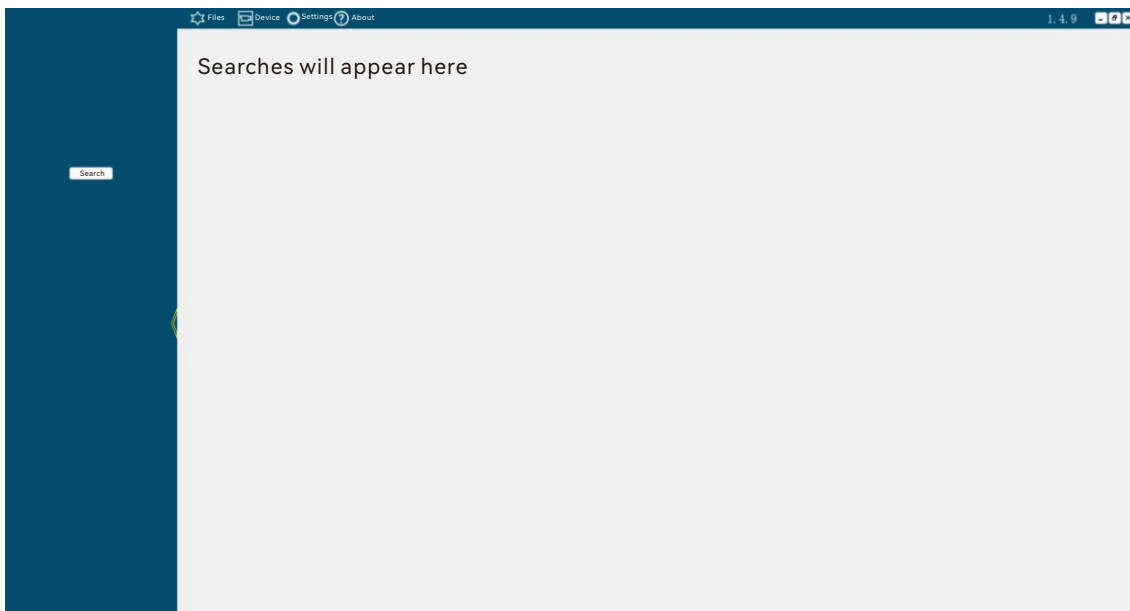
Users can configure and maintain the DK-DS series through the software produced by DADISICK. Connecting to the DK-DS series through the TCP/IP protocol, its functions include:

1. Configure device network parameters.
2. View basic device information.
3. Monitor device status.
4. Set device parameters.
5. Display measured distance, speed and acceleration.
6. Restart the device
7. Turn on/off the laser.

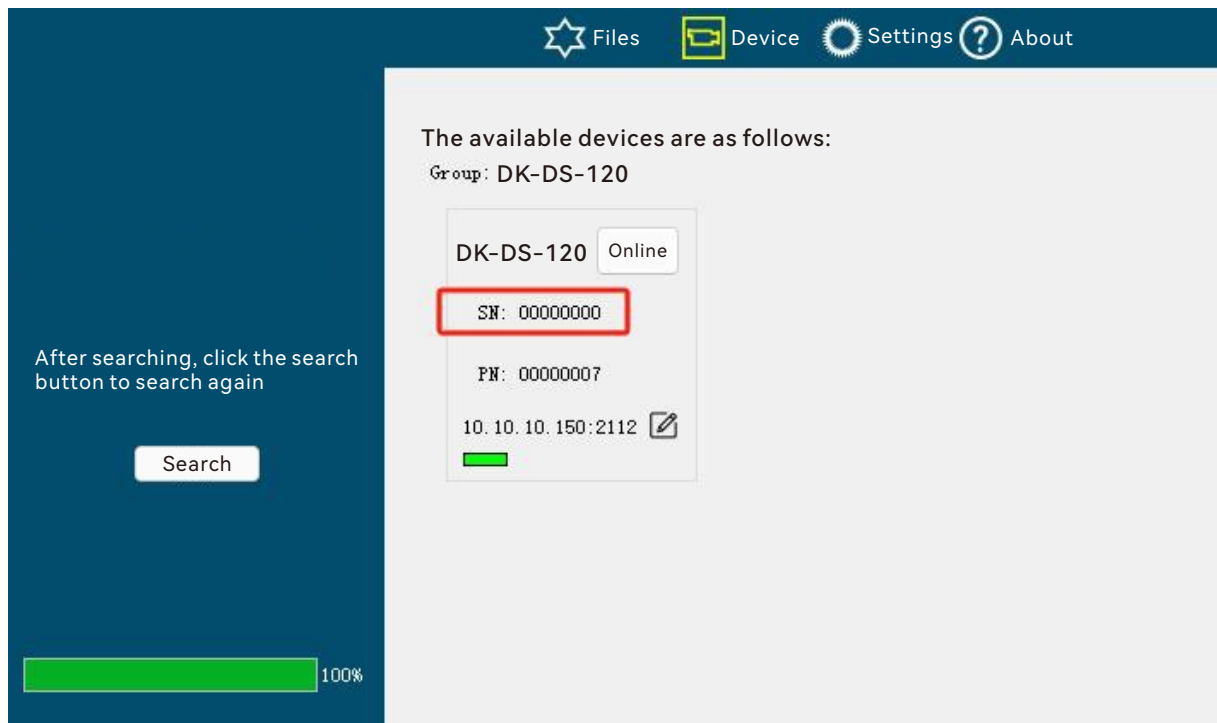
This chapter explains in detail the operation of the DK-DS series with the software.

1.1 Device Search

After the software is started, it will be as shown below:



Click the "Search" button, and the software will find the DK-DS series devices connected to the host computer. As shown below:



From the picture, you can see the summary information of the device, including:

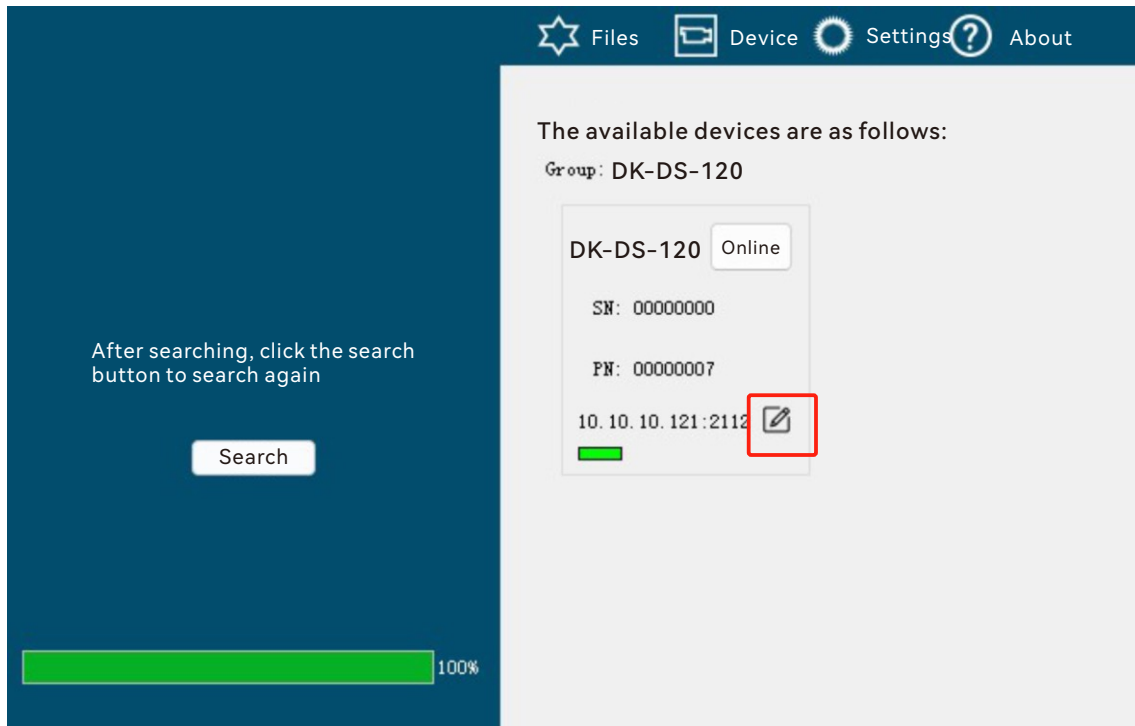
1. Device model: DK-DS-120.
2. SN: Serial number.
3. PN: Part number.
4. Basic network configuration: IP address and port.

Note:

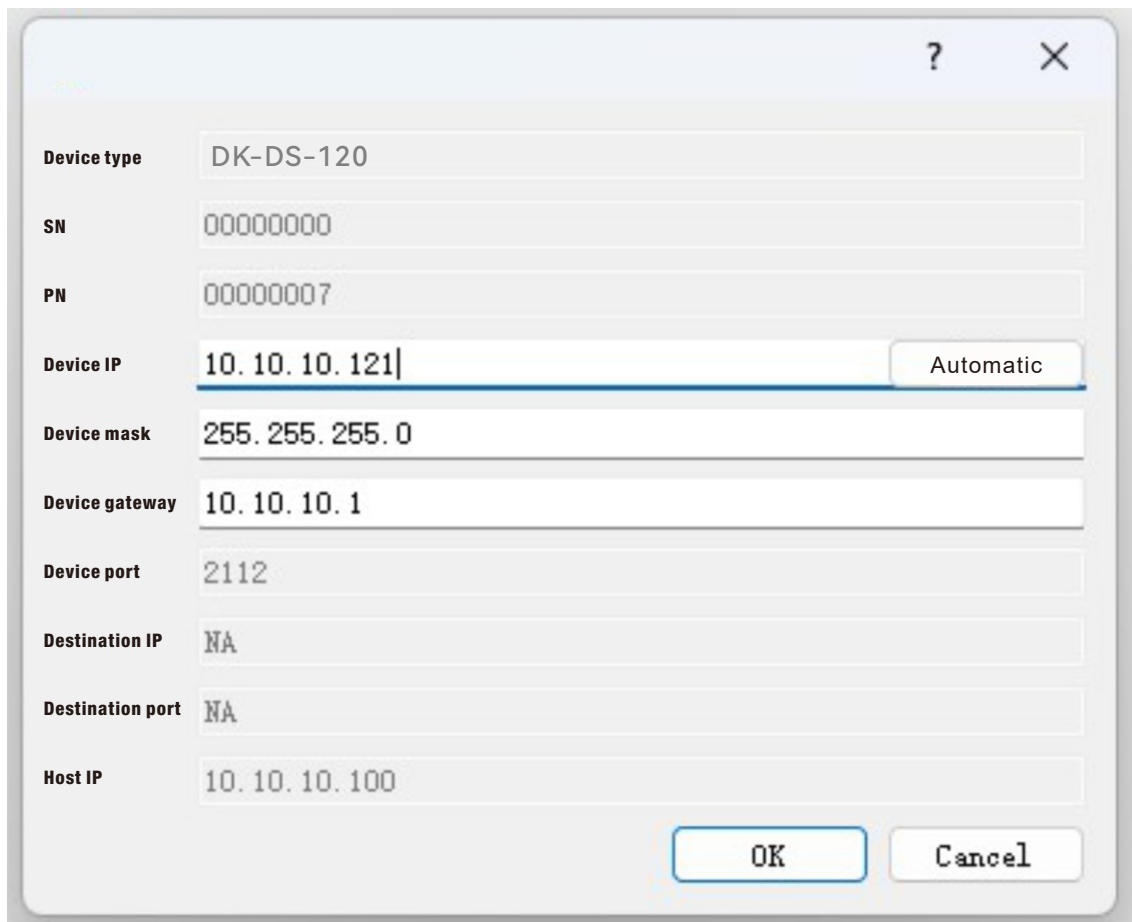
1. The software can operate DK-LD-05D, DK-LD-20D and DK-DS series devices produced by Dadisick. So when searching for devices, if there are other types of devices connected to the host computer, they can also be searched and enter the device list of the software.
2. If there are multiple DK-DS series devices connected to the host computer, the software will search for multiple devices.
3. The software searches for DK-DS series devices through UDP broadcast.

1.2 Network Configuration

After searching for the device, click the Edit button to enter the network configuration page, as shown below:



The edit page is as follows:



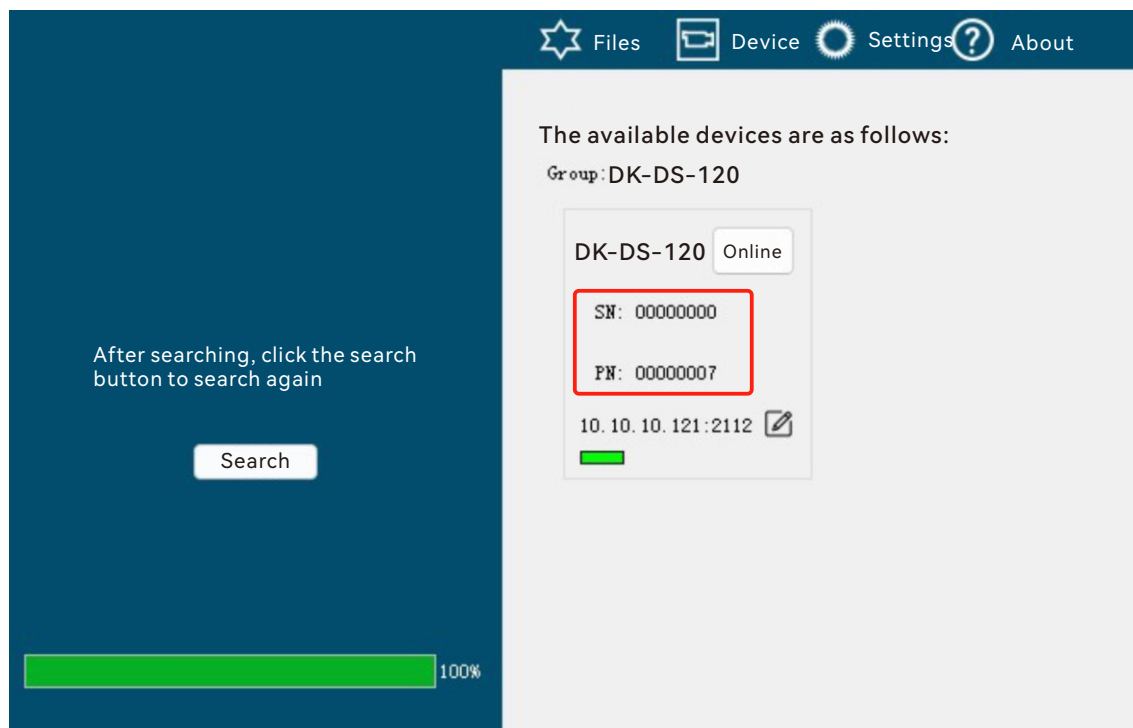
1. Device IP address.
2. Device subnet mask.
3. Device gateway.

Note:

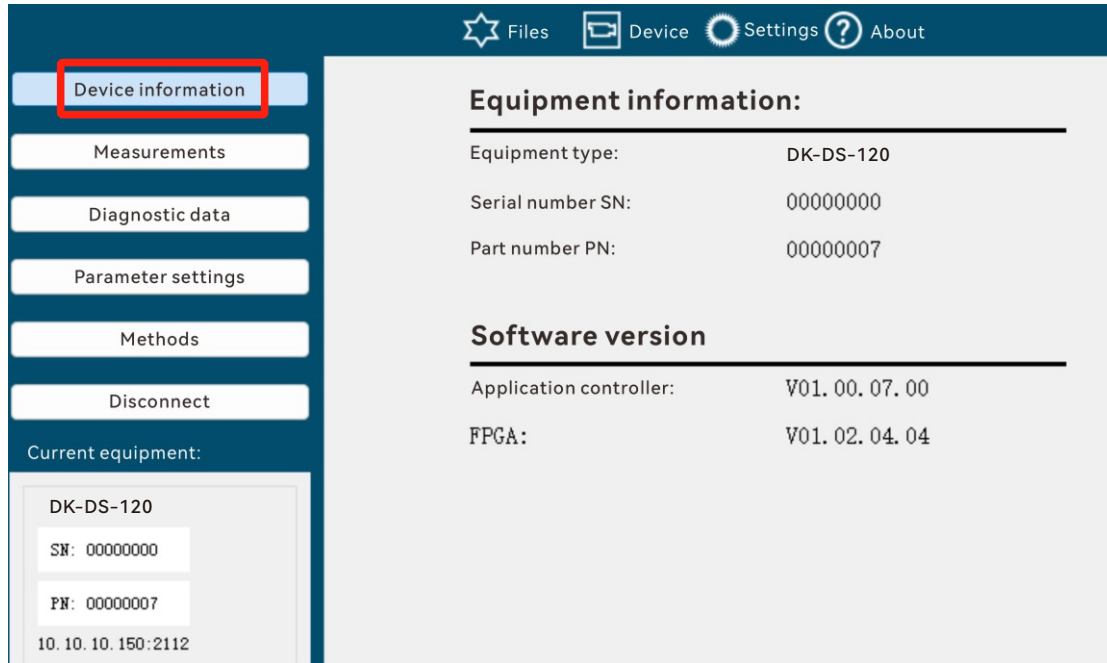
1. The software connects to the DK-DS series device via TCP protocol.
2. The TCP service port number of the DK-DS series device is 2112 and cannot be changed.
3. The DK-DS series device only accepts one TCP connection request from an external device at the same time.

1.3 Device Information

Double-click the searched device, as shown in the figure below, and you can connect to the DK-DS series device via TCP.



After the device is connected, the "Device Information" page is displayed, as shown below:



The fields that need to be emphasized include:

1. Application Controller Version: DK-DS series device firmware version.
2. FPGA: DK-DS series device FPGA program version.

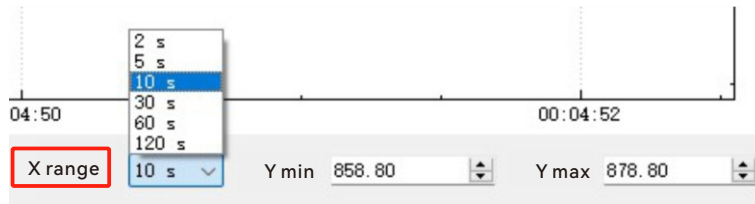
1.4 Measurement Value

After the software is connected to the DK-DS series device, click "Measurement Value" on the left to display the current measurement visualization data of the DK-DS series device, as shown below:

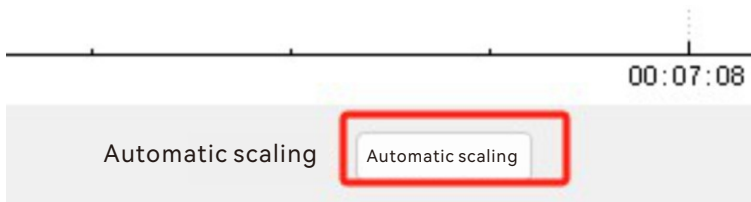


It should be noted that:

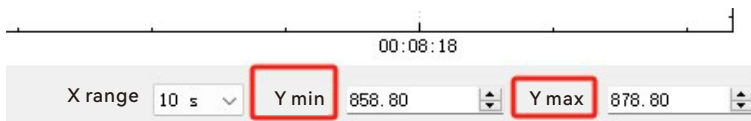
1. The blue line in the figure is the distance data currently measured by DK-DS-120.
2. The horizontal axis is the time axis, the unit is "s (seconds)", and its range can be selected through the "X range" drop-down menu in the lower right corner. The default is 10s, as shown below:



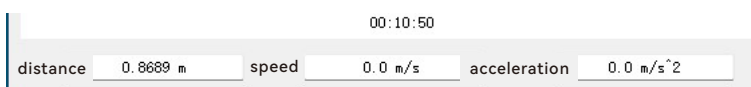
3. The vertical axis is the distance axis, and the unit is "mm (millimeter)". Its range can be automatically adjusted according to the current distance by clicking the "Auto Zoom" button at the bottom of the software to facilitate user observation. As shown below:



You can also manually adjust the value through the "Y minimum value" and "Y maximum value" in the lower right corner, as shown below:

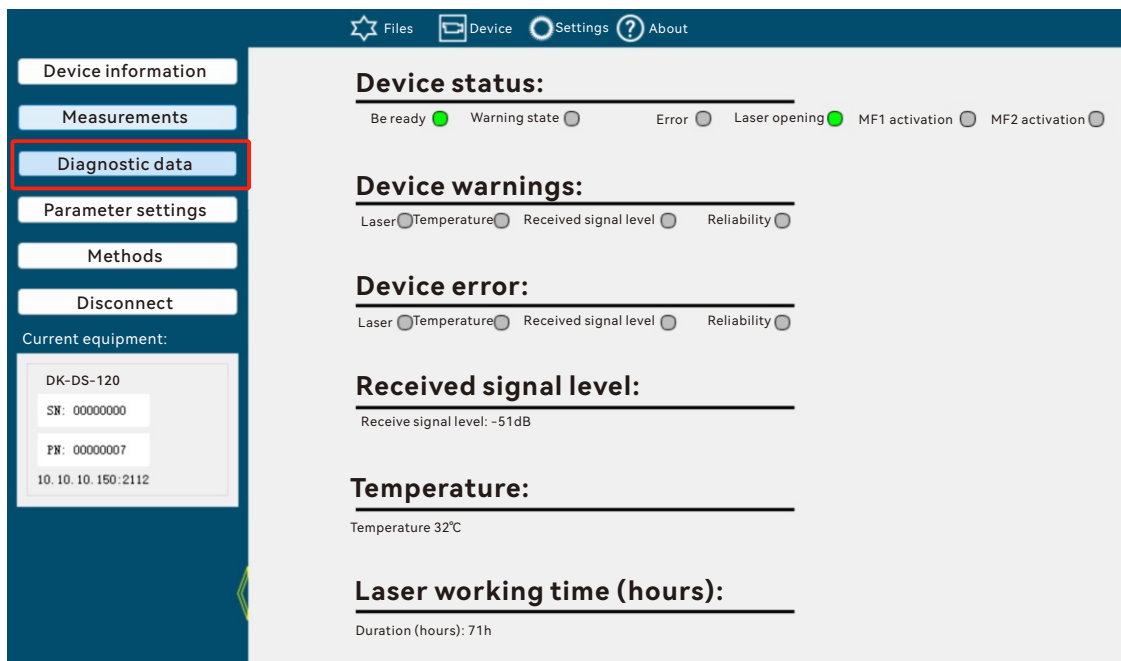


4. The numerical data displayed on this interface include: the distance, speed, and acceleration of the measured object, which are in the lower left corner of the interface, as shown below:



1.5 Diagnostic Data

Click the "Diagnostic Data" button to detect the device's operating status, as shown below:



The meanings of each label are as follows:

1. Device status: describes the current status of the device.
 - (1) Ready status: the device is ready or in working state.
 - (2) Warning status: the device has triggered an alarm, see "Device Warning" for details.
 - (3) Error status: the device has an error, see "Device Error" for details.
 - (4) Laser on: the laser is in the "on" or "off" state.
 - (5) MF1 active: whether MF1 is active.
 - (6) MF2 active: whether MF2 is active.
2. Device warning: whether the device issues a warning message.
 - (1) Laser: the laser service life is about to reach the critical value.
 - (2) Temperature: the internal temperature of DK-DS-120 is about to reach the critical value.
 - (3) Received signal level: the received signal level attenuation is about to reach the critical value.
 - (4) Credibility: due to reasons such as reflection intensity, the data measured by DK-DS-120 is about to be unreliable.
3. Device error.
 - (1) Laser: The service life of the laser has exceeded the critical value.
 - (2) Temperature: The internal temperature of DK-DS-120 has exceeded the critical value.
 - (3) Received signal level: The attenuation of the received signal level has exceeded the critical value.

(4) Credibility: Due to reflection intensity and other reasons, the data measured by DK-DS-120 is no longer credible.

4. Received signal level: The level attenuation value of the current received signal.

5. Temperature: The current internal temperature of DK-DS-120.

6. Laser working time: The total working time of DK-DS-120 from the first use.

1.6 Parameter Setting

Click the "Parameter Setting" button to set the working parameters of DK-DS-120, as shown below:

The screenshot displays the web interface for the DK-DS-120 sensor. On the left, a sidebar contains navigation options: 'Device information', 'Measurements', 'Diagnostic data', 'Parameter settings' (highlighted with a red box), 'Methods', and 'Disconnect'. Below the sidebar, the 'Current equipment' section shows the following details for the DK-DS-120 device: SN: 00000000, PN: 00000007, and IP: 10.10.10.121:2112.

The main content area is titled 'General settings' and contains the following configuration sections:

- General settings:** Distance offset (-100 mm), Presets (11264 mm).
- SSI configuration:** SSI configuration (24 Bit binary + Error (binary)), SSI distance resolution (0.125 mm).
- SSI error bit configuration:**
 - Credibility alarm
 - Device not ready
 - Receive signal level alarm
 - MF1 activated
 - Laser alarm
 - MF2 activated
 - Temperature alarm
- MF1/ MF2 activation:** MF activation (Enable).
- MF1 function configuration:** Function (Default Value), Activation Level (Low).
- MF2 function configuration:** Function (Service), Activation Level (Low).
- MF2 Service Configuration:**
 - Confidence Alarm/Error
 - Device Not Ready
 - Receive Signal Level Alarm/Error

Each item is explained below.

1. General settings.

General settings

Distance offset mm
 Presets mm

- (1) Distance offset: Set the distance offset value of the device.
- (2) Preset value: Set the preset value of the device.

2. SSI configuration.

SSI configuration

SSI configuration ▼
 SSI distance resolution ▼

- (1) SSI configuration: configure the data transmission format of the SSI interface.

SSI configuration

SSI configuration ▼
 SSI distance resolution ▼

SSI Error Bit Configuration

- ▼
-
-
-
-
-
-

- (2) SSI distance resolution: Configure the distance resolution of the SSI interface.

3. SSI error bit configuration.

SSI Error Bit Configuration

Credibility alarm

Device not ready

Receive signal level alarm

MF1 activated

Laser alarm

MF2 activated

Temperature alarm

The checkbox before the alarm type indicates whether the event corresponding to the item is indicated in the SSI error bit when it occurs.

The indicator light after the alarm type indicates whether the event corresponding to the item is occurring.

Prerequisite: You need to select the item with "Error" in "SSI Configuration".

- (1) Credibility alarm: Whether the SSI error bit is a credibility alarm.

- (2) Receive signal level alarm: whether the SSI error bit alarms for the receive signal level.
 - (3) Laser alarm: whether the SSI error bit alarms for the laser life.
 - (4) Temperature alarm: whether the SSI error bit alarms for the internal temperature of the device.
 - (5) Device not ready: whether the SSI error bit alarms for the device ready status.
 - (6) MF1 activation: whether the SSI error bit alarms for MF1 activation.
 - (7) MF1 activation: whether the SSI error bit alarms for MF2 activation.
4. MF1/MF2 activation: indicates whether the MF1/MF2 function is enabled.

SSI configuration

SSI configuration

A screenshot of a software configuration window titled "SSI configuration". It features a dropdown menu with three options: "Enable", "Enable", and "Disable". The first "Enable" option is highlighted in blue, indicating it is the selected value.

Enable: Enables the MF1/MF2 function and can be configured through software.

Disable: Disables the MF1/MF2 function.

5. MF1 function configuration: Configures which function MF1 uses.

MF1 function configuration

Function

Activation level

A screenshot of a software configuration window titled "MF1 function configuration". It features a dropdown menu with five options: "Distance", "Speed", "Service", "Laser off", and "Preset value". The "Speed" option is highlighted in blue, indicating it is the selected value.

Distance: MF1 is used for distance alarm (output)

Speed: MF1 is used for speed alarm (output)

Service: MF1 is used for service alarm (output)

Laser off: MF1 is used to control the laser switch (input)

Preset value: MF1 is used to enable the preset value (input)

Activation level: Set the activation level of MF1

6. MF1 distance threshold: Configure the distance threshold.

MF1 distance threshold

Threshold distance mm

Hysteresis distance mm

Threshold distance: When the distance is less than this value, MF1 is activated.

Hysteresis distance: When it is greater than the threshold distance + hysteresis distance, MF1 is no longer activated.

7. MF1 speed threshold: See "MF1 function configuration".

MF1 speed threshold

Speed threshold mm/s

Speed mode

- Deceleration
- Acceleration
- Deceleration
- Acceleration/deceleration

Speed threshold: Set the speed threshold for the alarm.

Speed mode:

Forward: The speed in the distance increasing direction exceeds the preset value.

Reverse: The speed in the distance decreasing direction exceeds the preset value.

Forward/reverse: The speed in the distance increasing/decreasing direction exceeds the preset value.

8. MF1 service configuration: Configure which "services" MF1 is associated with.

The checkbox in front of the alarm type indicates whether MF1 is triggered when the event corresponding to the entry occurs.

The indicator light after the alarm type indicates whether the event corresponding to the entry is occurring.

MF1 Service Configuration

Confidence Alarm/Error Device Not Ready

Receive Signal Level Alarm/Error

Laser Alarm/Error

Temperature Alarm/Error

(1) Credibility Alarm/Error: Whether MF1 issues an alarm for reliability.

(2) Received signal level Alarm/Error: Whether MF1 issues an alarm for the received signal level.

(3) Laser Alarm/Error: Whether MF1 issues an alarm for the laser life.

(4) Temperature alarm/error: whether MF1 alarms for the internal temperature of the device.

(5) Device not ready: whether MF1 alarms for the device ready status.

9. MF2 function configuration

Same as MF1.

10. MF2 distance threshold.

Same as MF1.

11. MF2 speed threshold.

Same as MF1.

12. MF2 service configuration.

Same as MF1.

13. MF activation count: records the number of MF1/MF2 activations during this operation. Reset to 0 after restart.

(1) MF1 activation count: the number of times MF1 is activated during use.

(2) MF2 activation count: the number of times MF2 is activated during use.

14. Device advanced functions

Advanced device functions

Average distance filter	Slow ▼
Average speed filter	Medium ▼
Error alarm delay	200 ms ▼

(1) Average distance filter: Whether to enable the Kalman algorithm to filter the measured distance.

Slow: The Kalman filter depth is 32.

Medium: The Kalman filter depth is 16.

Fast: The Kalman filter depth is 1 (Kalman filter is not enabled).

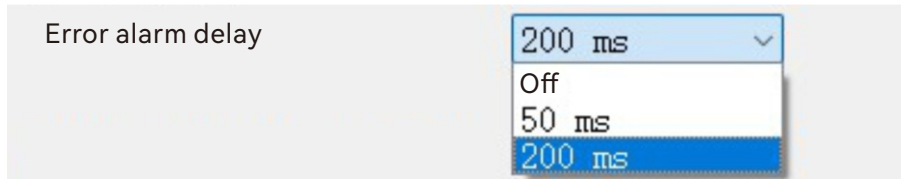
(2) Average speed filter: Whether to enable the Kalman algorithm to filter the measured speed.

Slow: The Kalman filter depth is 32.

Medium: The Kalman filter depth is 16.

Fast: The Kalman filter depth is 1 (Kalman filter is not enabled).

(3) Error alarm delay: How long after an error occurs, the alarm is issued.



Off: Alarm immediately.

50ms: Alarm after 50ms.

200ms: Alarm after 200ms.

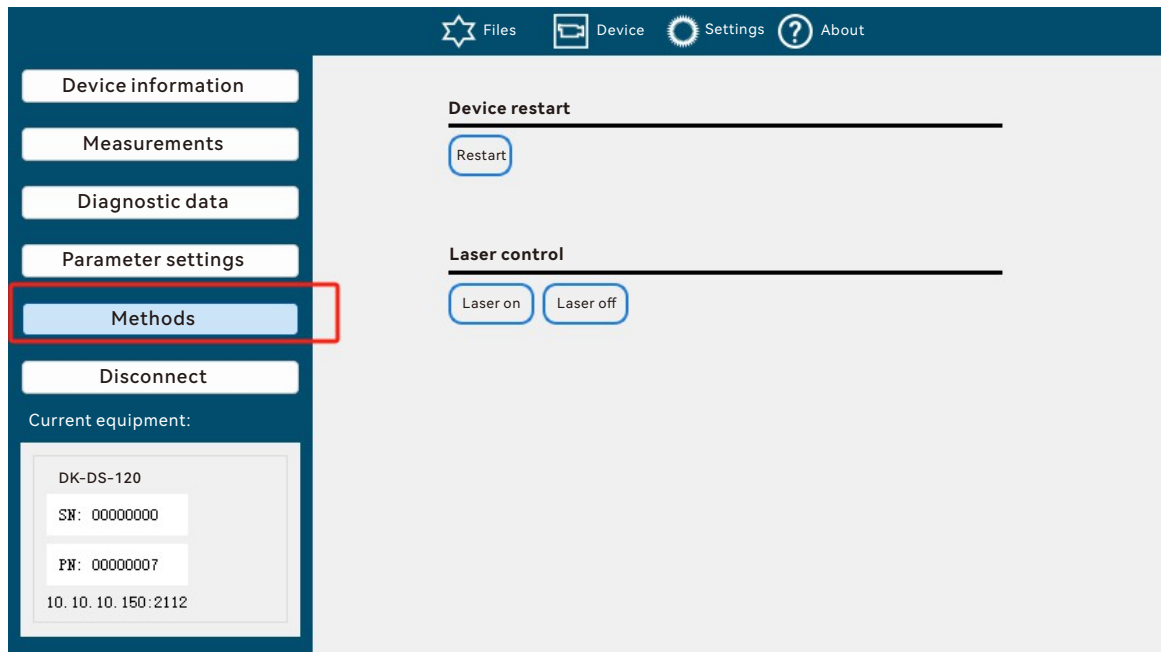
15. Set parameters to default values



Press the "Reset Parameters" button to reset all parameters to factory default values.

1.7 Device operation (method)

Click the "method" button to operate DK-DS-120, as shown below:



There are three operations for DK-DS-120:

1. Restart: Restart DK-DS-120, and the connection between the current software and DK-DS-120 will be disconnected.
2. Laser On: Turn on the laser.
3. Laser Off: Turn off the laser. DK-DS-120 is still in working state, and the connection between the software and DK-DS-120 will be maintained.