Technical Note

Software update instructions
FD70

Updating software using field app

- Laptop with field app software installed
- Ethernet maintenance cable

The maintenance laptop must support an Ethernet connection.

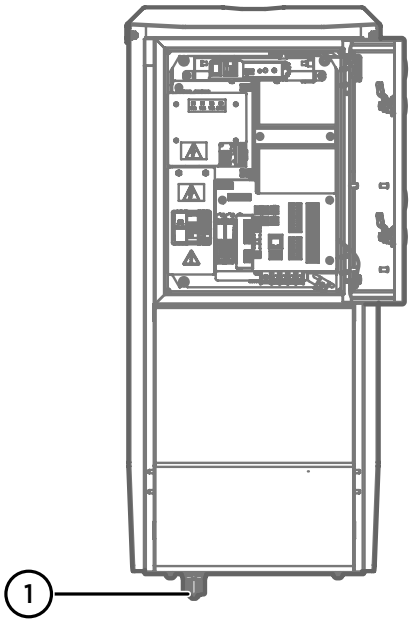
Make sure you know the IP address of the device you are updating. The following instructions use the default IP of **192.168.2.101**.

Make sure you know the admin password for the device. Set the admin password during device activation. For more information, see the *Vaisala Forward Scatter Sensor FD70 Installation Guide* included in each delivery.

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1. Connect your laptop to FD70.
   - Connect your laptop to the maintenance port of FD70 with the Ethernet maintenance cable.



1 Maintenance port

CAUTION! Remove the Ethernet maintenance cable after setup. It is not intended for permanent installation.

   - If you have the measurement unit only, connect the cable to the open-ended cable.

Table 1 Measurement unit cable pinout

Pin	mm^2	Wire color	Description
7	1	Black	Operating voltage Vin–
6	1	Red	Operating voltage Vin+
5	1	White-red	Heating voltage VH+
8	1	White-black	Heating voltage VH–
13	0.14	Violet	COM3: RS-485A
2	0.14	White-violet	COM3: RS-485B
1	0.25	Brown	Day/Night switch
14	0.14	White-orange	Ethernet TX+
4	0.14	Orange	Ethernet TX–
15	0.14	White-green	Ethernet RX+
3	0.14	Green	Ethernet RX–
10	0.14	White-blue	COM1: GND1
16	0.14	Pink	COM1: RS-232 TX / RS-485B
9	0.14	White-pink	COM1: RS-232 RX / RS-485A

Pin	mm^2	Wire color	Description
11	0.25	Blue	COM2: GND2
12	0.14	Gray	COM2: RS-232 TX / RS-485B
17	0.14	White-gray	COM2: RS-232 RX / RS-485A

2. Configure your computer settings to match the FD70 network settings.



The following instructions use the default IP of **192.168.2.101**. Make sure you know the IP address of the device you are updating.

a. From your computer **Control Panel**, open **Network and Internet** / **Network and Sharing Center**.
b. Select **Change adapter options**.
c. Right-click **Ethernet** and select **Properties**.
d. Double-click **Internet Protocol Version 4 (TCP/IPv4)**.
e. Fill in the **IP address**, **Subnet mask**, and **Default gateway** fields according to the following table.

Property	Value
IP address	192.168.2.5
Subnet mask	255.255.255.0
Default gateway	192.168.2.1

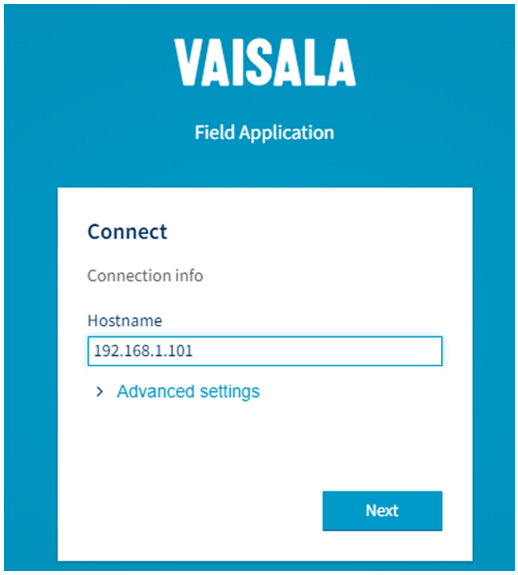
f. After configuring your computer settings, select **OK** on both pop-up windows to close them. The settings save and apply when the windows are closed.

3. Unzip the full software package into any folder on your computer. The package contains the firmware file necessary for the software update.



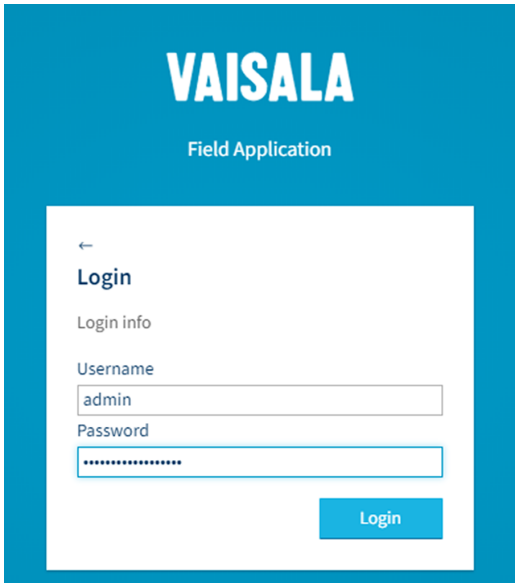
Vaisala recommends that you delete any existing update folders and packages before proceeding, or create a new folder to unzip the new update package into.

4. Open the field app software.

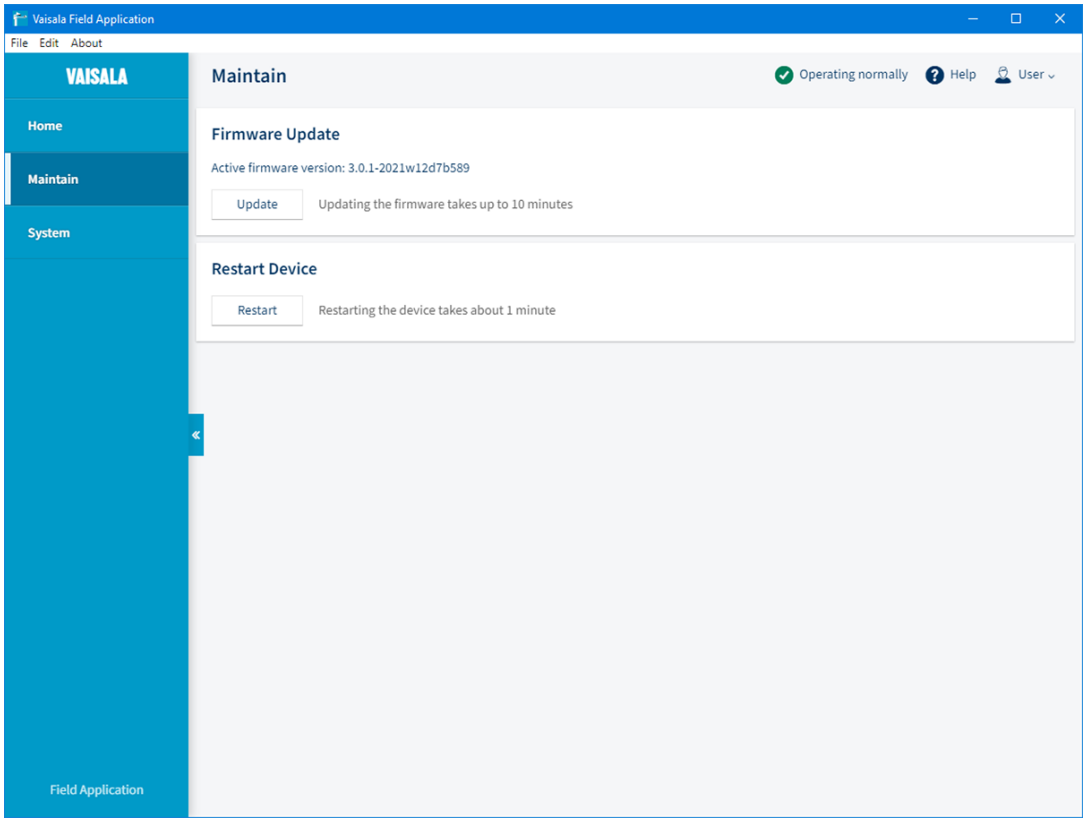


The following instructions use the default IP of **192.168.2.101**. Make sure you know the IP address of the device you are updating to type the correct **Host Name** information.

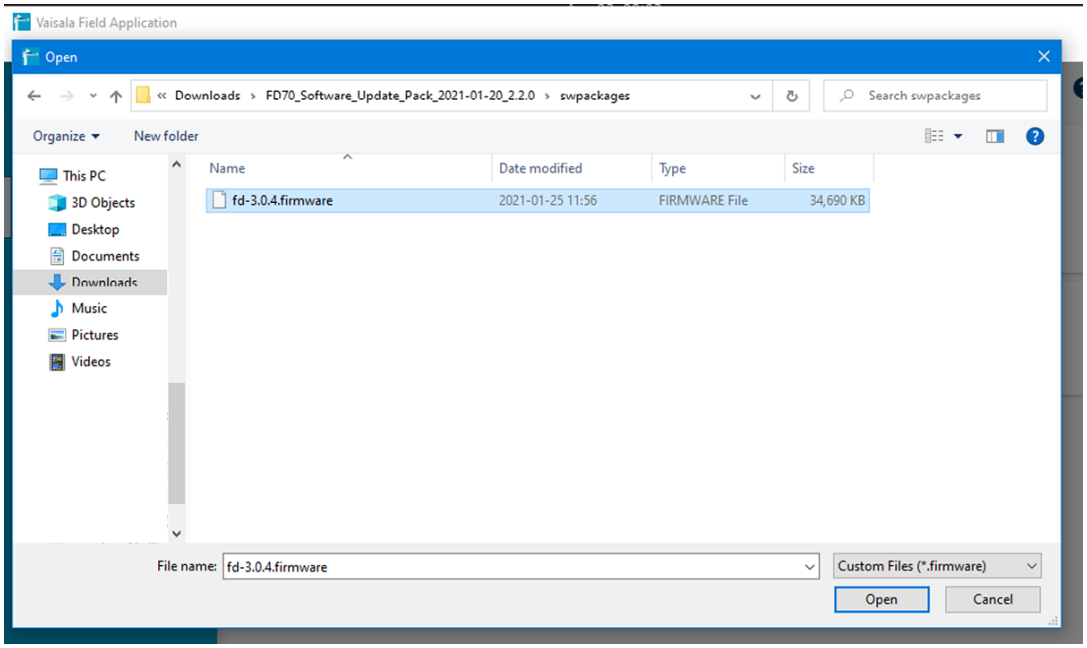
5. Log in with IP address and password as described in the introduction of this section.



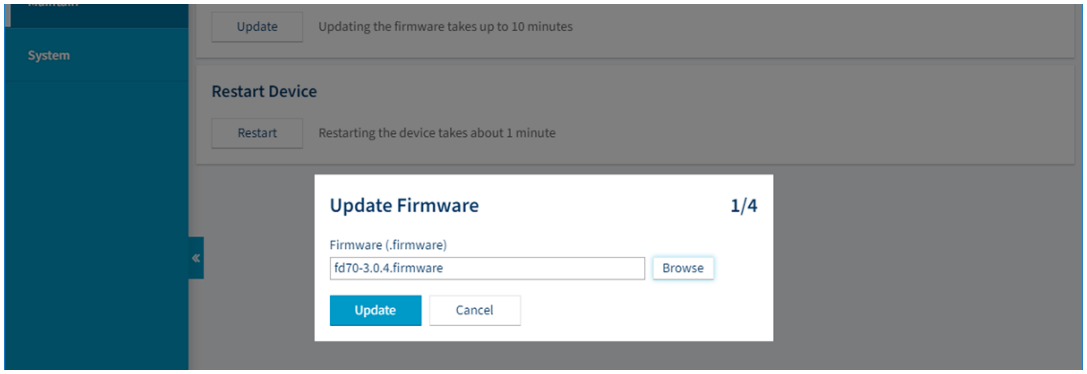
6. Select **Maintain** and **Update**.



7. Select **Browse** and browse to the software package you unzipped.
Select **Open**.

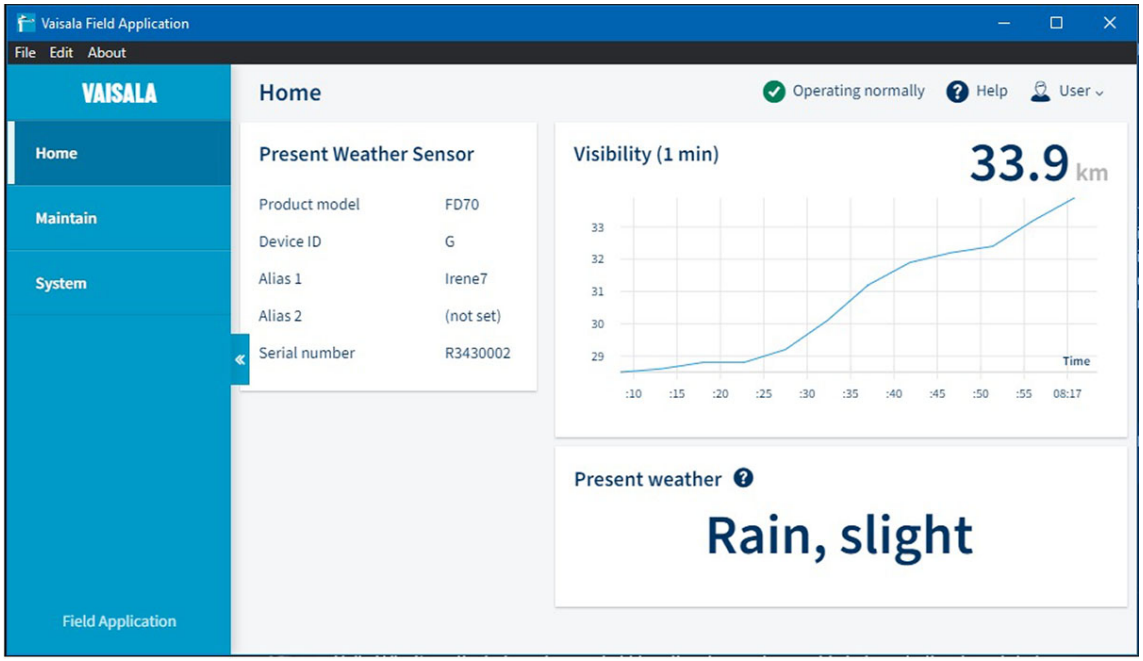


8. Select **Update**.



When ready, the device boots automatically.

Field app confirms the overall device status and shows the measurement data on its main screen.



Updating software using terminal software

Vaisala recommends updating FD70 software using field app. If your device has software version 1.3 or earlier, the following sections describe the process for updating the software. You do not need to make a backup before the software update.

The software update interrupts measurements.

Preparing software update

Make sure you know the IP address of the device you are updating. The following instructions use the default IP of **192.168.2.101**.

Make sure you know the admin password for the device. Set the admin password during device activation. For more information, see the *Vaisala Forward Scatter Sensor FD70 Installation Guide* included in each delivery.

The following instruction applies to Windows Defender Firewall configuration. If another software firewall is in use, configure the firewall to allow **`server.cmd`** / **`python.exe`** to act as server.

1. Unzip the full software package into any folder on your computer. The package contains the firmware file and server program necessary for the software update.

   Vaisala recommends that you delete any existing update folders and packages before proceeding, or create a new folder to unzip the new update package into.

2. Double-click on **`server.cmd`**.
   The Windows Security Alert window opens and displays the network options.
3. Select all available network options.
4. Click **Allow Access**.
5. Close the **`server.cmd`** command window.

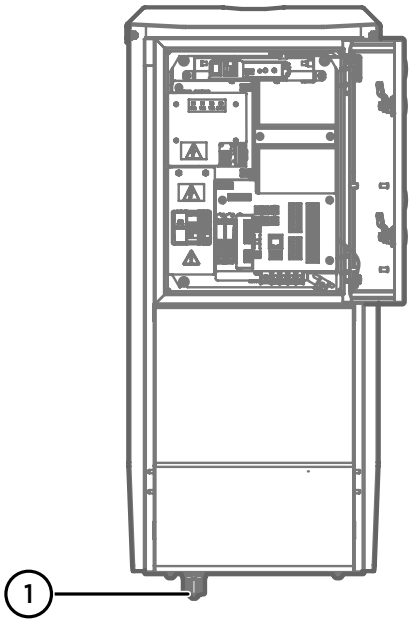
Updating software on site

- Laptop with terminal software that supports SSH (for example, freeware TeraTerm or PuTTY)
- Ethernet maintenance cable

The maintenance laptop must support an Ethernet connection.

The following steps use the PuTTY terminal software as an example.

1. Connect your laptop to FD70.
   - Connect your laptop to the maintenance port of FD70 with the Ethernet maintenance cable.



1 Maintenance port

CAUTION! Remove the Ethernet maintenance cable after setup. It is not intended for permanent installation.

   - If you have the measurement unit only, connect the cable to the open-ended cable.

Table 2 Measurement unit cable pinout

Pin	mm^2	Wire color	Description
7	1	Black	Operating voltage Vin–
6	1	Red	Operating voltage Vin+
5	1	White-red	Heating voltage VH+
8	1	White-black	Heating voltage VH–
13	0.14	Violet	COM3: RS-485A
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Pin	mm²	Wire color	Description
11	0.25	Blue	COM2: GND2
12	0.14	Gray	COM2: RS-232 TX / RS-485B
17	0.14	White-gray	COM2: RS-232 RX / RS-485A

2. Configure your computer settings to match the FD70 network settings.



The following instructions use the default IP of **192.168.2.101**. Make sure you know the IP address of the device you are updating.

a. From your computer **Control Panel**, open **Network and Internet** / **Network and Sharing Center**.
b. Select **Change adapter options**.
c. Right-click **Ethernet** and select **Properties**.
d. Double-click **Internet Protocol Version 4 (TCP/IPv4)**.
e. Fill in the **IP address**, **Subnet mask**, and **Default gateway** fields according to the following table.

Property	Value
IP address	192.168.2.5
Subnet mask	255.255.255.0
Default gateway	192.168.2.1

f. After configuring your computer settings, select **OK** on both pop-up windows to close them. The settings save and apply when the windows are closed.

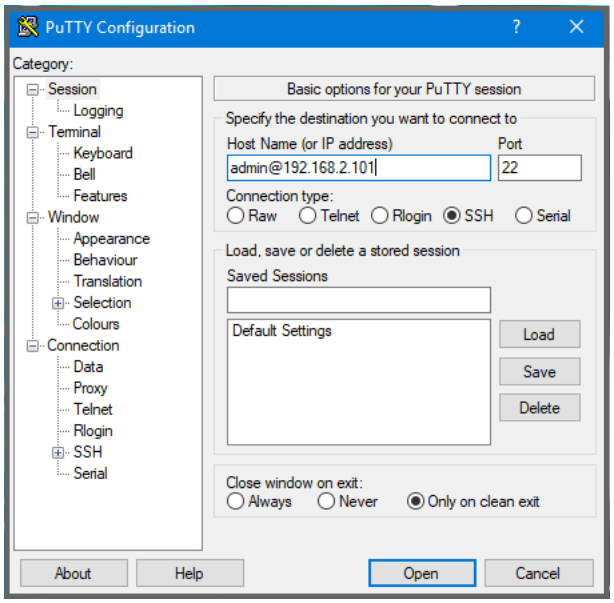
3. Double-click on **`server.cmd`** in the folder you where you extracted it in Preparing software update (page 7).
4. Select **Edit - Mark** from the menu under the top left icon in the Software package server window.
5. Select the link to the software update package. The relevant link includes the IP address you configured for the server laptop in step 2. Press **ENTER** to copy the link to the clipboard.

6. Open the terminal software.

> The following instructions use the default IP of **192.168.2.101**. Make sure you know the IP address of the device you are updating to type the correct **Host Name** information.

a. In the **PuTTY Configuration** window, type in **Host Name** the following:

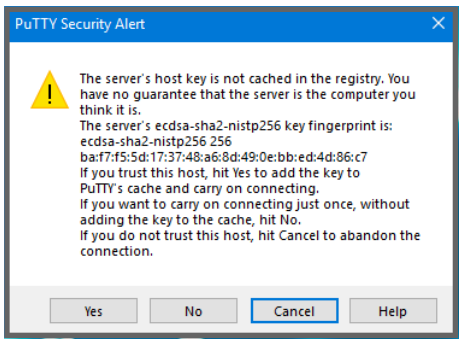
```
admin@192.168.2.101
```



Do not modify the other settings.

b. Select **Open**.

c. For the **Security Alert**, select **Yes** or **No**.



7. When prompted, type the admin password.

8. Type the following commands:

```
level 2
swupdate <target device> <link to software update package>
```

The following example uses the default target device `fsc`. Right-click to paste the software package location copied in step 5.

```
swupdate fsc http://192.168.2.5:8000/fd70_1.0.11.firmware
```

9. Follow the onscreen instructions and information.
The software update takes a few minutes.
   - In case of failure during the software update, the device indicates a failed update.
   - In case of failure during startup, the previous software version is restored. If the failure persists, contact Vaisala.

When done, the device reboots and the terminal software closes.



The terminal software can display an error dialog as a result of the connection closure. Click **OK**.

Close the **`server.cmd`** command window.

10. Restart the terminal software and log in.
11. To verify the software version number, type the following command:

```
system
```

12. Verify operation.
    a. Open the terminal software and establish a connection as a data user.
       - If you are using PuTTY, in the **PuTTY Configuration** window type the following in the **Host Name** field:

```
data@<ip>
```

       - If you are using TeraTerm, in the **New connection** window, type the following in the **Host** field:

```
data@<ip>
```

       The IP address you type in the field corresponds to your own operating environment's IP according to the information you set during activation. For more information, see *Vaisala Forward Scatter Sensor FD70 Installation Guide*. Measurement data is shown with the default MES7.
    b. Check the overall status bits in the MES7 output to ensure the device is working in normal status.