

INSTALLATION

MasterSCADA 4D. Version 1.3.10

Table of Contents

MasterSCADA 4D components

IDE system requirements

Runtime system requirements

Project-specific system requirements

Installing MasterSCADA 4D

 Installing MasterSCADA 4D IDE

 Installing MasterSCADA 4D runtime

 Installing the HMI client

Upgrade procedure

License protection

 USB protection key

Compatibility with antiviruses and firewalls

MasterSCADA 4D components

The MasterSCADA 4D system consists of the following components:

- integrated development environment (DT);
- runtime comprising a [set of modules](#) (RT);
- HMI client.

A project is created within the IDE and is later started in real time controlled by the runtime modules, while the HMI client provides access to the graphical part.

IDE

The IDE is a [Windows](#) application.

General view of the IDE:

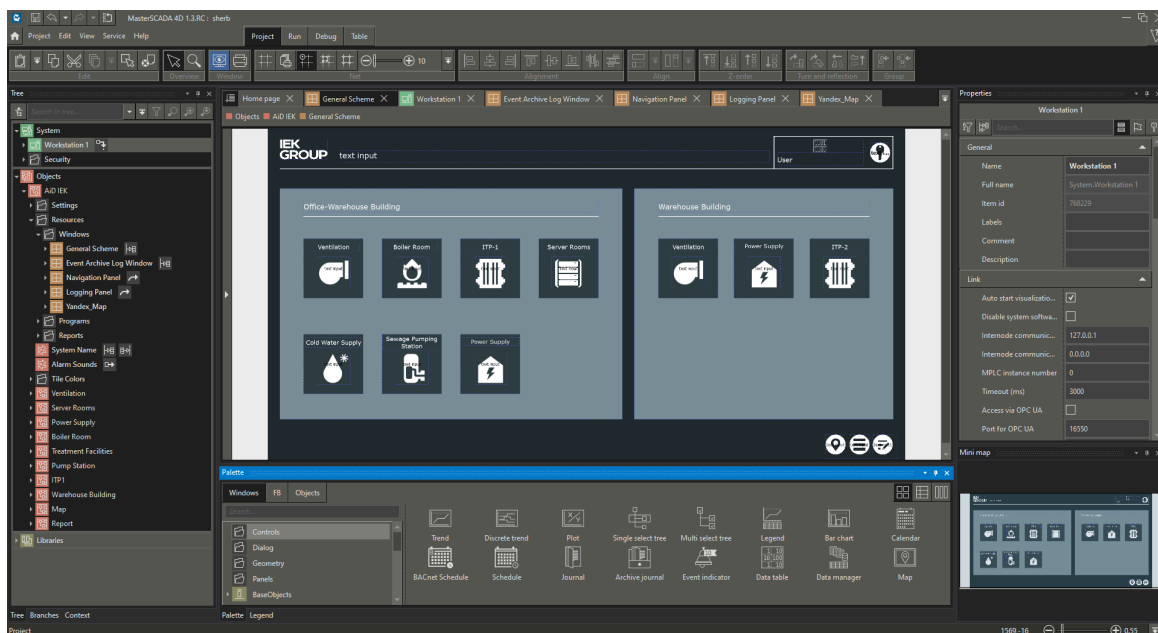


Figure 1 – General view of the IDE

The project is created within a unified IDE. No other tools or editors are needed. Once entered in the system, data become available for any project component.

The IDE is easy and convenient to use with a context menu as the basic tool for creating project components and a **drag-and-drop** tool for setting up the links between components. The IDE boasts a wide range of tools for replicating ready-made solutions, automating typical operations as well as for debugging projects in emulation (on a local PC) and real execution modes (incl. loading to a target device).

Runtime

The runtime is a system where a created project is executed.

With **MasterSCADA 4D**, you can program all of the following in one project:

- programmable logic controllers (PLCs);
- local control panels (local HMI panels);
- operator workstations;
- archive and process servers;
- cloud services.

MasterSCADA 4D provides special runtimes for the control system components above. The runtime is [installed](#) on these devices and serves to load and start the designated project parts when so commanded by the IDE.

 **Important! A project in the runtime can be launched automatically and without using the IDE when the device is started.**

MasterSCADA 4D provides runtimes for various operating systems such as Windows and Linux. A commercial version of IDE should be chosen depending on the quantity of received and transmitted data and on project-specific functions. For more details, see **Selecting Runtime Options**.

HMI client

MasterSCADA 4D uses the HTML5 standard to provide visual information. To implement the standard, a **web server** is included in the server end in most of the runtime modules. It generates HTML5 pages to be displayed in the **MasterSCADA 4D** HMI client.

It should be noted that the HTML5 standard is supported by all modern web browsers, including our in-house browser. This makes the visual information displayed in **MasterSCADA 4D** much more accessible as you can use any device with a modern web browser as an HMI client. These may include not only PCs but also operator panels, smartphones, and tablets. You can connect to the **MasterSCADA 4D** server from any of these devices and get access to the same information as provided to an operator at a local workstation. Of course, this is only possible if access to the information or control has been granted.

IDE system requirements

Minimum system requirements

- operating system (OS) – Windows 10 SP1 x64 (the operating system must support Russian);
- CPU – Intel® Core™ i3, 2.3 GHz;
- RAM – 8 GB;
- display resolution – 1280x1024;
- hard disk – 10 GB free space;
- keyboard, mouse.

 **Important!** MasterSCADA 4D IDE can be installed if the minimum system requirements are met but you may experience lagging during project development when switching between tabs or using trees and editor panels. Long-running operations such as project conversion may be time-consuming.

Recommended system requirements

- OS – Windows 10 x64 or later;
- CPU – latest multicore CPU: Intel® Core™ i5 or higher, 3.4 GHz
- RAM – 16 GB or more;
- discrete graphics card with up-to-date drivers (5 years old or newer)
- display resolution – 1920x1080;
- hard disk - SSD;
- free disk space – 100 GB;
- keyboard, mouse.

 **Important!** Only 64-bit operating systems are supported.

 **Important!** MasterSCADA 4D IDE can be installed and run on virtual machines but we do not guarantee performance or stability in this case. Even though the resources allocated to a virtual machine meet the system requirements, this will not provide the same efficiency as on physical hardware.

 See also: [Project-specific system requirements](#)

Runtime system requirements

MasterSCADA 4D RT runtime has a modular structure.

List of modules:

Module	Purpose
Data processing server	Receives data via standard protocols: Modbus , DCON , etc.
OPC UA client/server	Data can be received and transmitted via the OPC UA cross-platform standard
Archive server	Historical logging option. If historical logging is provided on PLCs, provide the archive storage location. This would typically be an external memory card
Web server	Used where remote or local HMI clients need to be connected
HMI client	A client connected to the runtime web server. It could be IEK DIGITAL client or another brand e.g., any Chrome version later than v.66, etc.

You can connect and disconnect some modules when configuring your runtime in accordance with the project requirements and hardware capabilities. Each module demands certain device resources. Minimum requirements for the installation of **MasterSCADA 4D RT** runtime:

Module	RAM (MB)	Flash (MB)	CPU
Data processing server	256	64	400 MHz
OPC UA client/server	256	64	400 MHz
Archive server	256	64	400 MHz
Web server	256	64	400 MHz

Module	RAM (MB)	Flash (MB)	CPU
HMI client	2048	4096	1 GHz

Runtime can use almost any CPUs that meet the above power requirements. Make sure that APIs are in place in order to develop software for particular hardware.

The requirements may be raised depending on many factors such as project complexity, amount of data received, specific archiving procedures, fast response, large quantity of dynamically modified window components, if any, etc. Such characteristics are used to determine whether **MasterSCADA 4D RT** can be ported to a new PLC type, operator panels, and other form factors.

Supported operating systems:

OS	Minimum version	Remarks
Windows	Windows 10	We recommend relevant Windows updates to ensure that your protection key works properly.
Windows Embedded Standard	Windows 10	We recommend relevant Windows updates to ensure that your protection key works properly.
Windows Server	Windows Server 2016	We recommend relevant Windows updates to ensure that your protection key works properly.
Linux (incl. AstraLinux, Debian, AltLinux, etc.)	3.18	Supported for x86, x64, arm, arm64. Linux-like systems typically come with default runtime but some OS builds may require some improvements.
MAC OS		Supported for an HMI client only. An HTML5-

OS	Minimum version	Remarks
		enabled browser installed in the OS can be used as an HMI client.

Supported additional platforms:

Elbrus microprocessor-based platforms (various architectures use different runtime versions)	Elbrus (AstraLinux available - on request)
Baikal T1 and Baikal M microprocessor-based platforms	Debian GNU/Linux/QNX (information on these runtime is available on request; not included in MasterSCADA 4D as standard)

 **See also:** [Project-specific system requirements](#)

Project-specific system requirements

MasterSCADA 4D IDE and runtime requirements are related to the number of tags that are supposed to be used in a project.

Recommended system requirements for IDE:

Tag quantity	CPU	RAM	SSD/HDD	GPU	OS
100 - 1000	Intel Core i5 (2600 MHz+) 10th generation or higher (or similar)	16 GB	128 GB SSD	Discrete graphics card (NVIDIA GeForce GT 1030 or similar)	Windows 10, Windows 11, Windows Server 2016 and higher
2500 - 10000	Intel Core i7 (3100 MHz+) 10th generation or higher (or similar)	32 GB	256 GB SSD		
30000 and more	Intel Core i9-9900K 9th Gen or higher / (we also recommend later versions such as Core™ i9-12900K and later).	64-256 GB	512 GB SSD		

Recommended system requirements for runtime:

Tag quantity	CPU	RAM	SSD/HDD	GPU	OS
100 - 1000	Intel Core i5 (2600 MHz+) 10th generation or higher (or similar)	16 GB	128 GB SSD	not required	Windows 10, Windows 11, Windows Server
2500 - 10000	Intel Core i7 (3100 MHz+) 10th generation or higher (or similar)	32 GB	256 GB SSD		

Tag quantity	CPU	RAM	SSD/HDD	GPU	OS
30,000 - 150,000	Intel Core i9-9900K 9th Gen or higher / (we also recommend later versions such as Core™ i9-12900K and later).	64-128 GB	512 GB SSD		2016 and higher. Linux (supported by all RT versions (Standard, Pro, Enterprise) except Lite): AstraLinux (1.7 or higher (Oryol, Voronezh, Smolensk)), ALT Linux (8 SP or higher), RED OS (7.3 or higher), Ubuntu (20.04 LTS or higher)
150,000 - 300,000	CPU: Intel Xeon Gold 6256 or Xeon W	256 GB	1 TB SSD		
300,000 - 500,000	CPU: Intel Xeon Gold 6256 or Xeon W	256-512 GB			
500,000 - 1,000,000	CPU: 2x Intel Xeon Gold 6256 and higher	512 GB			
1,000,000 - 2,000,000	CPU: 2x Intel Xeon Gold 6256 and higher	1 TB			

Recommended system requirements for DB server:

Datab ase	CPU	RAM	SSD for SQL	Netw ork requi reme nts	OS
Postgr eSQL	8 cores (16 logical threads), 3.5 GHz and higher	16 GB and more depending on the amount of data	30 GB + data space	Stabl e link at 10 Mbps or high er	Windows 10, Windows 11, Windows Server 2012 and higher, Linux (Astra/Alt/RED OS)
Micro soft SQL Server 2019 Expre ss and later	x64, 2.0 GHz or higher (AMD Opteron, AMD Athlon 64, Intel Xeon supporting Intel EM64T, Intel Pentium IV supporting EM64T and higher)		20 GB + data space	Intern et, stabl e link at 10 Mbps or high er	Windows 10, Windows 11, Windows Server 2016, Windows Server 2019
AVAD S	Intel Core i5 (2600 MHz+) 10th generation or higher (or similar)		1 GB + data space	Stabl e link at 10 Mbps or high er	Windows 7, Windows 10, Windows 11, Windows Server 2012 or higher, Linux (Astra/Alt/RED OS/Ubuntu/Debian)

Installing MasterSCADA 4D

Windows OS

There are two installers for MasterSCADA 4D products:

- *MasterSCADA4D.exe* – MasterSCADA 4D IDE (project editor) installation wizard (see [Installing MasterSCADA 4D IDE](#)). The IDE also includes MasterSCADA 4D RT runtime for workstations running Windows OS;
- *MasterSCADA4DRT.exe* – MasterSCADA 4D RT runtime installation wizard for workstations running Windows OS (see [Installing MasterSCADA 4D RT runtime](#)). This wizard does not install the project editor.

To install the required MasterSCADA 4D product, start the respective installer.

After installing any of the MasterSCADA 4D products above, the installation wizard will initiate the installation procedure of Core Components Redistributable and/or Microsoft.NET SDK if these products are not yet installed on the PC (see [Installing OPC Core Components Redistributable](#) and [Installing SDK](#)).

Other operating systems

The runtime installation method will depend on the device OS.

- [Linux](#)
- [Windows Embedded](#)

Installing MasterSCADA 4D IDE

Running *MasterSCADA4D.exe* opens the initial dialog of the installation wizard:

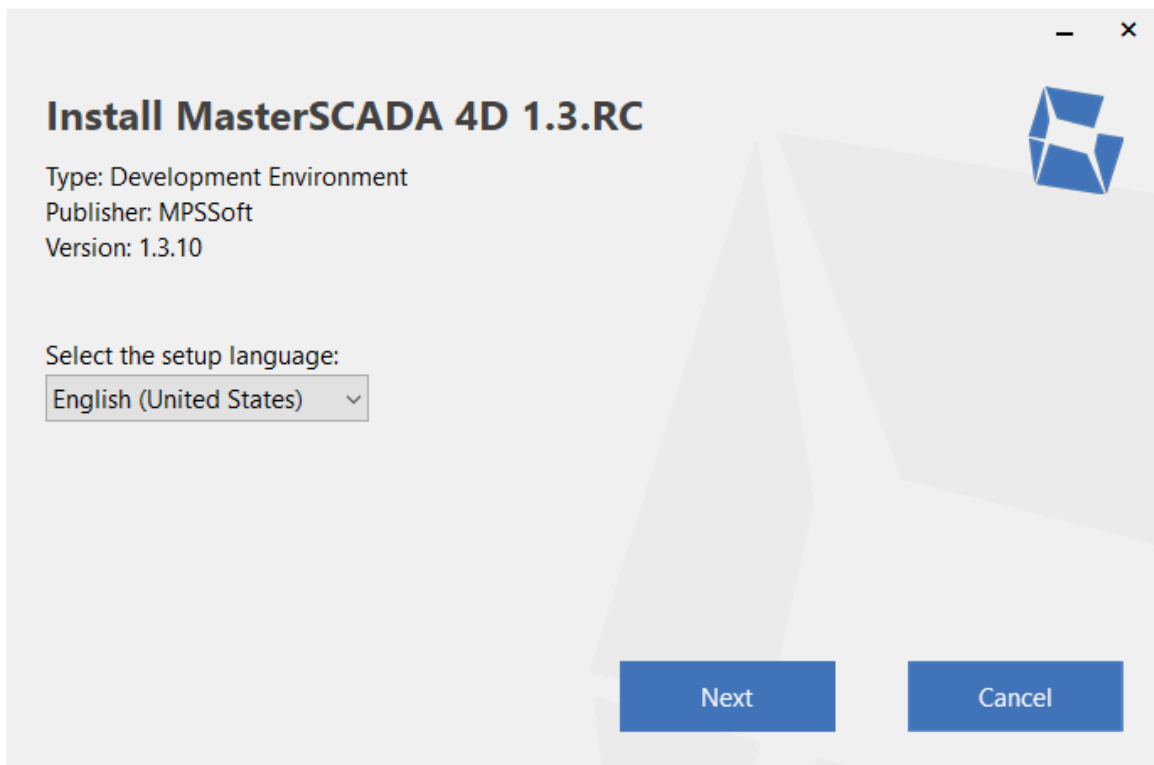


Figure 2 – Running MasterSCADA4D.exe opens the initial dialog of the installation wizard

In the dialog, select product localization (Russian and English are supported).

Click **Next** to open a license agreement dialog:

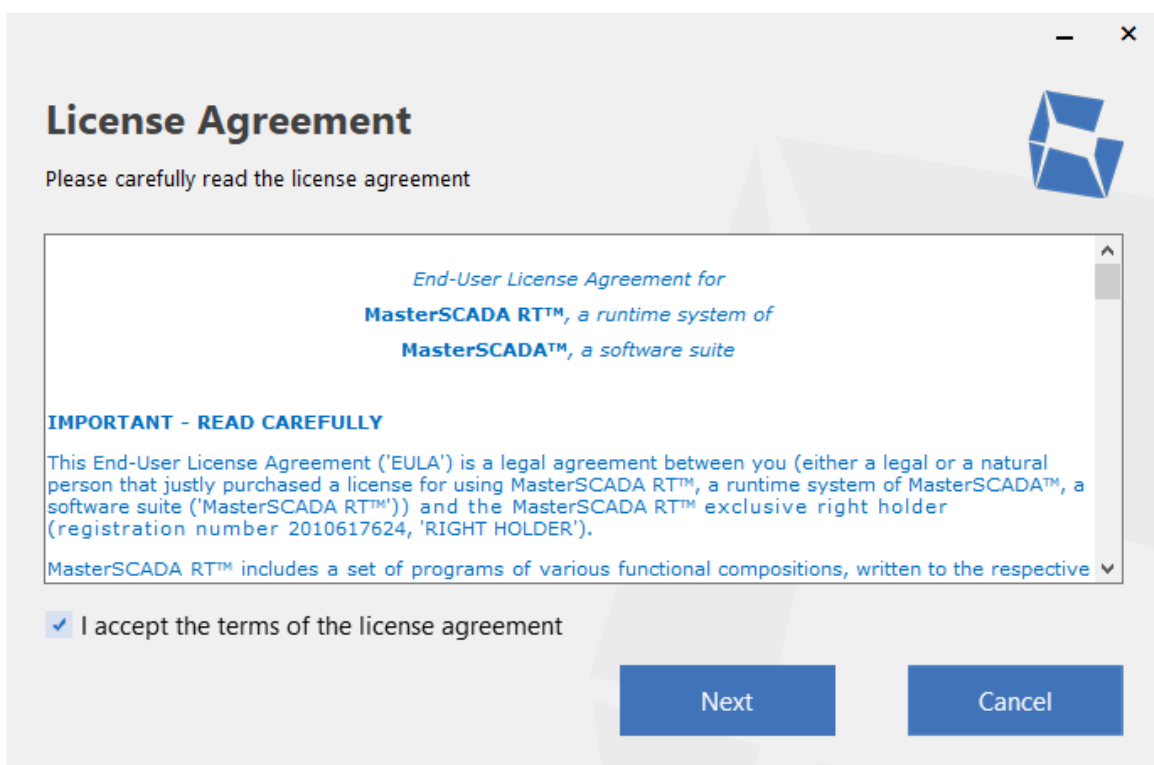


Figure 3 – Click Next to open a license agreement dialog

Read the text, check **I accept the terms in the license agreement**, and click **Next**. The following window will open:

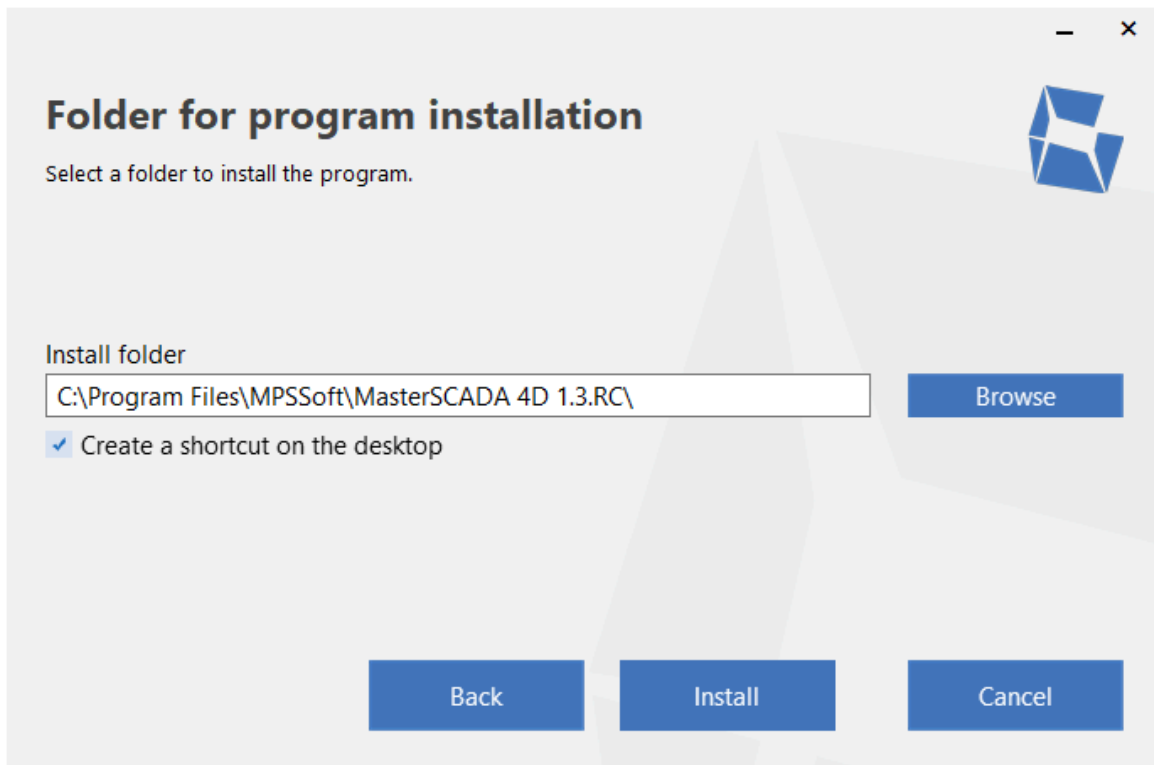


Figure 4

Here you can change the product destination folder using the **Browse** button and also create a program shortcut on the desktop by checking the **Create desktop shortcut** option.

 **Important! When selecting the installation path, avoid folders with Cyrillic characters in their names.**

Click **Install** to open the installation process dialog:

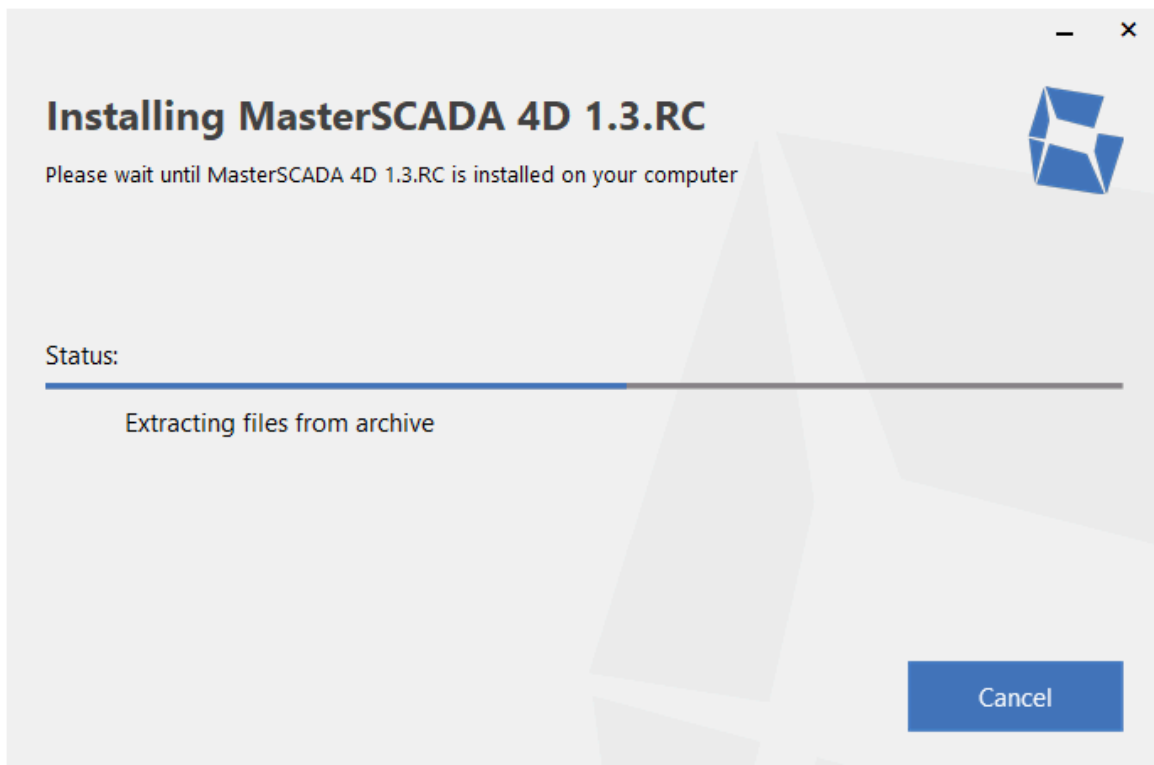


Figure 5 – Click Install to open the installation process dialog

You may need to allow the program to make changes to your device:

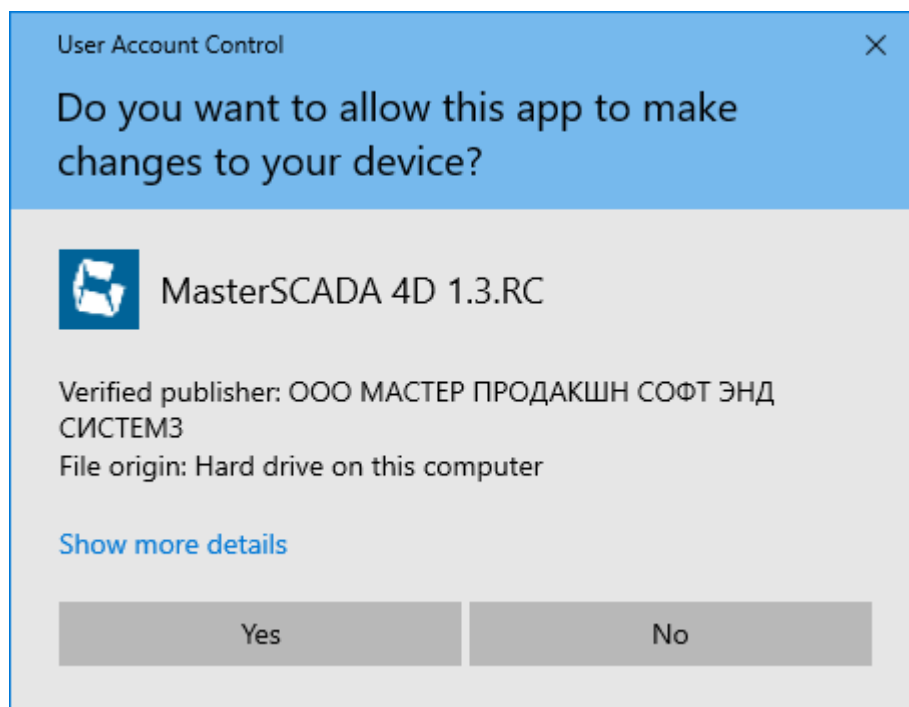


Figure 6 – You may need to allow the program to make changes to your device

To proceed with the installation, **click Yes**.

Wait until the installation is complete and the last wizard dialog appears:

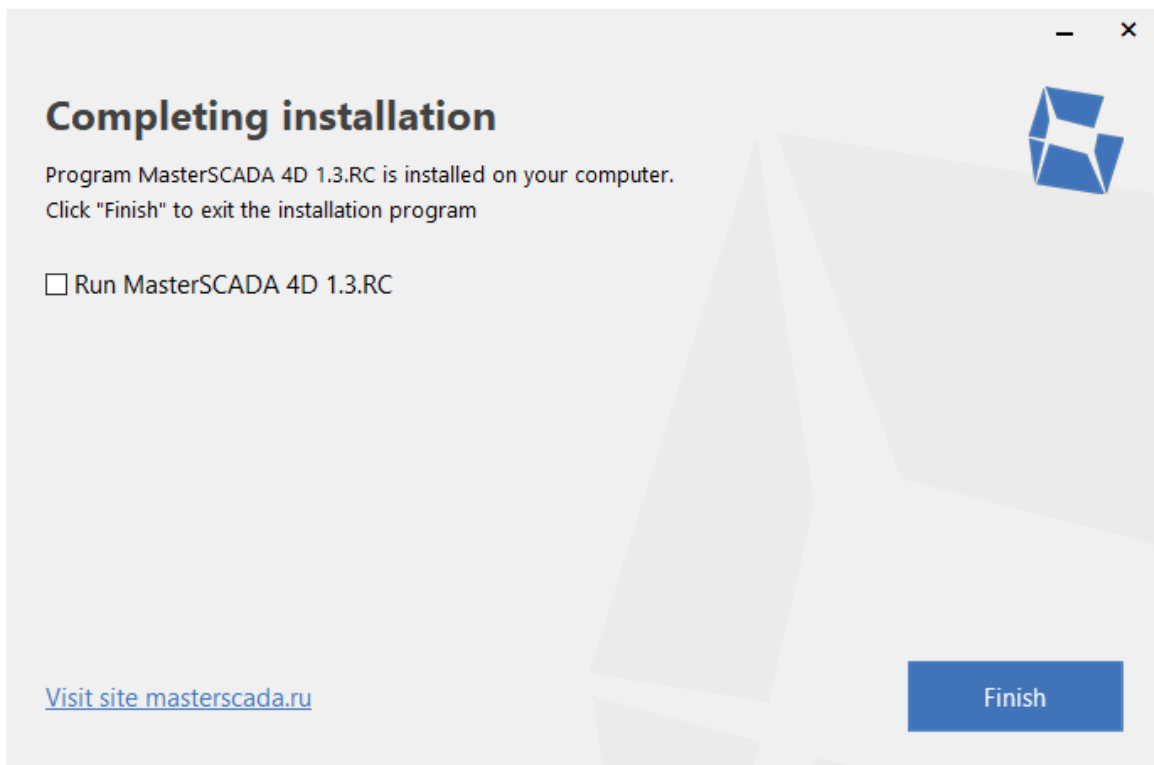


Figure 7 – Wait until the installation is complete and the last wizard dialog appears

You can also click **Visit** www.masterscada.ru to go to the official IEK DIGITAL website.

If you have selected **Launch MasterSCADA 4D**, click **Finish** to run MasterSCADA 4D IDE.

To close the wizard, click **Finish**.

 **Important! Make sure to clear the UTF-8 beta use check box in the OS language settings prior to installing the runtime in order to create projects in Russian in the English version of Windows:**

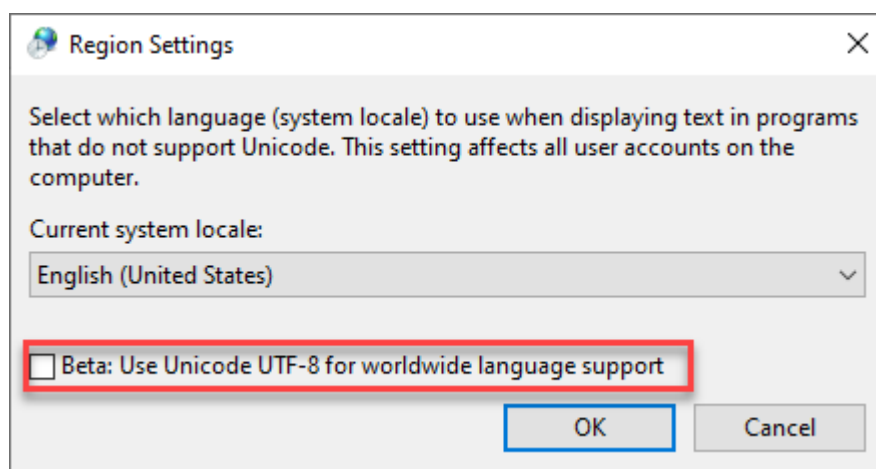
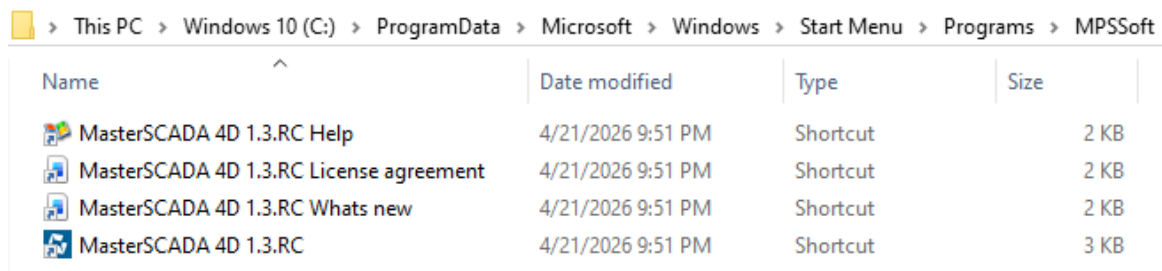


Figure 8

Description of MasterSCADA 4D shortcuts

After completing installation, the wizard will create a program group, **Start - All programs - MPSSoft**, containing the following menu items (see also [Using MasterSCADA 4D shortcuts](#)):



Name	Date modified	Type	Size
MasterSCADA 4D 1.3.RC Help	4/21/2026 9:51 PM	Shortcut	2 KB
MasterSCADA 4D 1.3.RC License agreement	4/21/2026 9:51 PM	Shortcut	2 KB
MasterSCADA 4D 1.3.RC Whats new	4/21/2026 9:51 PM	Shortcut	2 KB
MasterSCADA 4D 1.3.RC	4/21/2026 9:51 PM	Shortcut	3 KB

Figure 9

- **MasterSCADA 4D 1.3**, where 1.3 is the version number, starts the IDE (project editor; command `<MasterSCADA 4D installation folder>\bin\ms4d.exe`);
- **MasterSCADA 4D 1.3 What's new** opens the file `<MasterSCADA 4D installation folder>\bin\Config\WhatsNew.RTF`;
- **MasterSCADA 4D 1.3 Help** opens this help file (file `<MasterSCADA 4D installation folder>\bin\Config\Help\help.exe`);
- **MasterSCADA 4D 1.3 License Agreement** opens the license agreement (file `<MasterSCADA 4D installation folder>\bin\Config\License.RTF`).

Updating version on Windows OS

To update the MasterSCADA 4D IDE version, you must delete the current version and reinstall it.

See also: [Installing MasterSCADA 4D IDE](#)

- [Uninstalling MasterSCADA 4D](#)
- [Installing the runtime on Windows OS](#)

Uninstalling MasterSCADA 4D

To uninstall **MasterSCADA 4D**, go to the **Windows** control panel, open **Programs and Features (Apps & features)**, select **MasterSCADA 4D**, and click **Uninstall**:

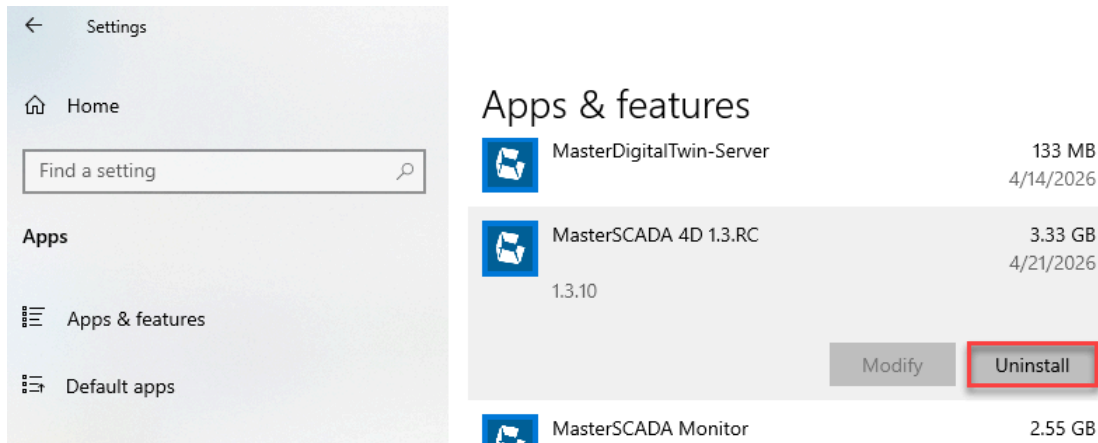


Figure 10

Starting up the IDE

To start up the IDE (project editor), select the required **MasterSCADA 4D** version in the **Start menu**, or double-click the **MasterSCADA 4D [version number] shortcut** on the desktop, or open <product installation folder>\bin\ms4d.exe from the Windows explorer. This will open the project editor start menu (see **Start menu**).

Once the project editor starts, a **sys_log** folder containing activity protocols (files named yy_mm_dd HH_MM_SS.log) is created in the %user profile%\AppData\Roaming\MPSSoft\MasterSCADA4D[version number]\ directory.

Installing additional components

Installing OPC Core Components Redistributable

The **MasterSCADA 4D** installation wizard **will automatically** run the **installation procedure** of **OPC Core Components Redistributable** if the product hasn't yet been installed on your PC.



Figure 11

The first dialog of the **OPC Core Components Redistributable** installation wizard is the license agreement dialog. Select **I Agree** and click **Next**. This will open the following wizard dialog:

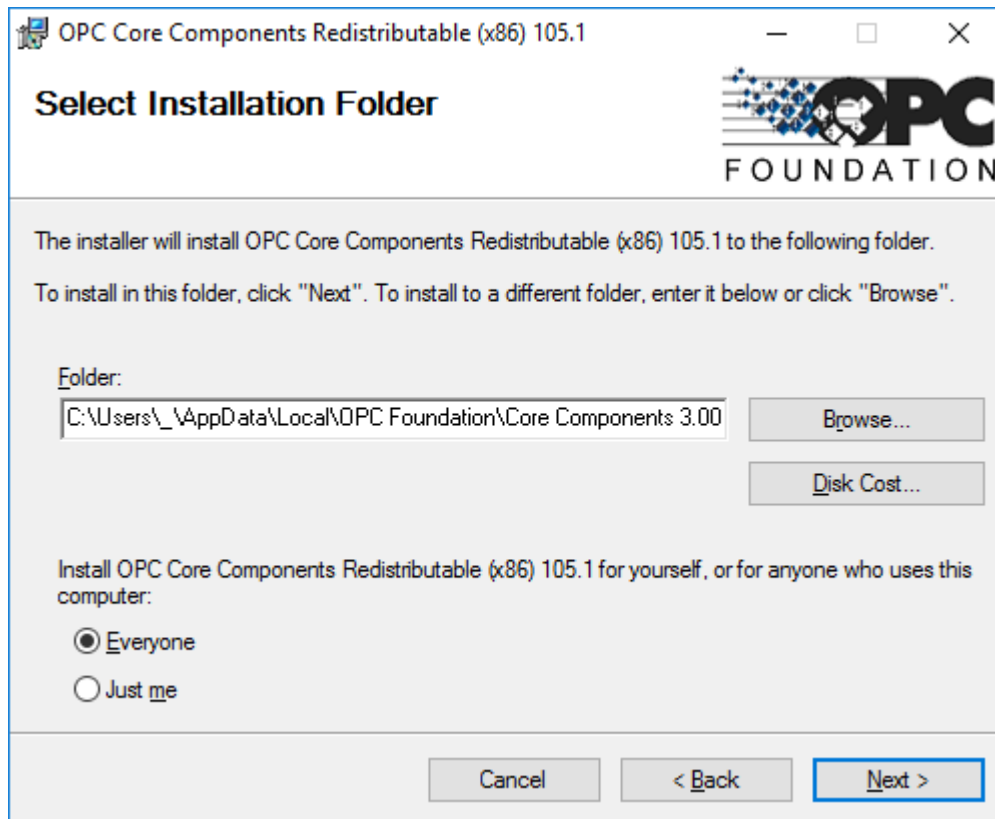


Figure 12

Here you can change the product installation folder (**Browse** button) and set an installation type for yourself (**Just me**) or for all users (**Everyone**). Click **Next** to open the installation confirmation dialog:

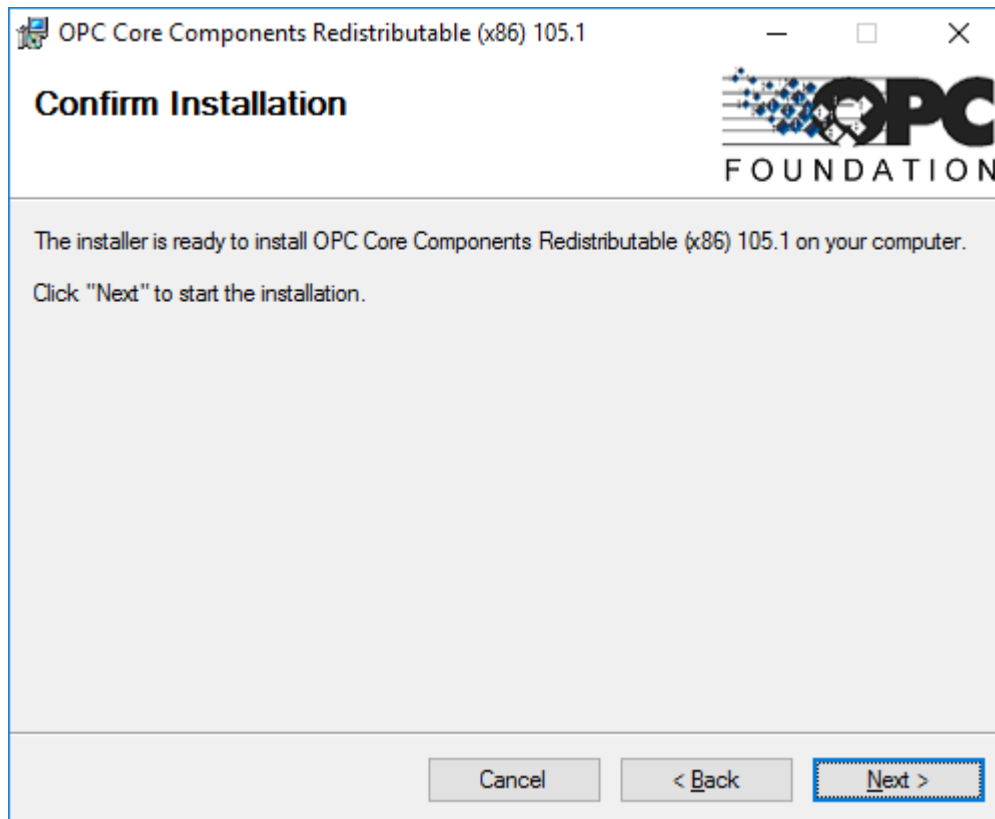


Figure 13

To start the installation procedure, click **Next**. The dialog will show the installation progress:

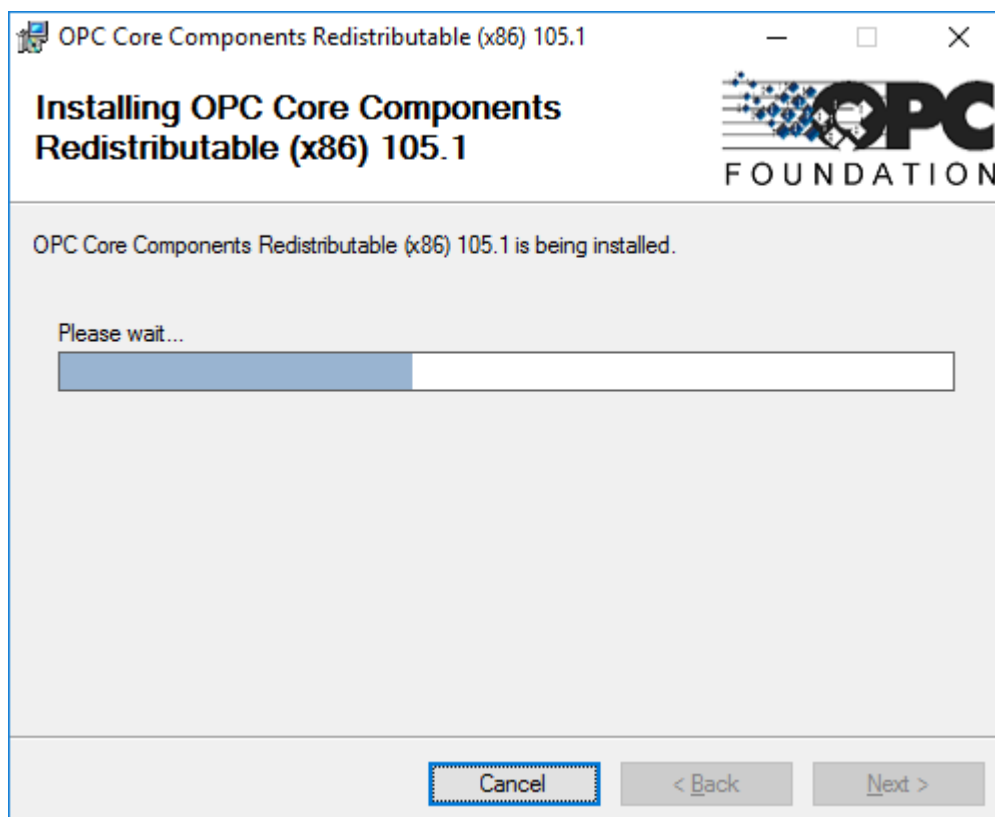


Figure 14 – To start the installation procedure, click Next. The dialog will show the installation progress

When the installation is complete, the wizard's final dialog will appear:

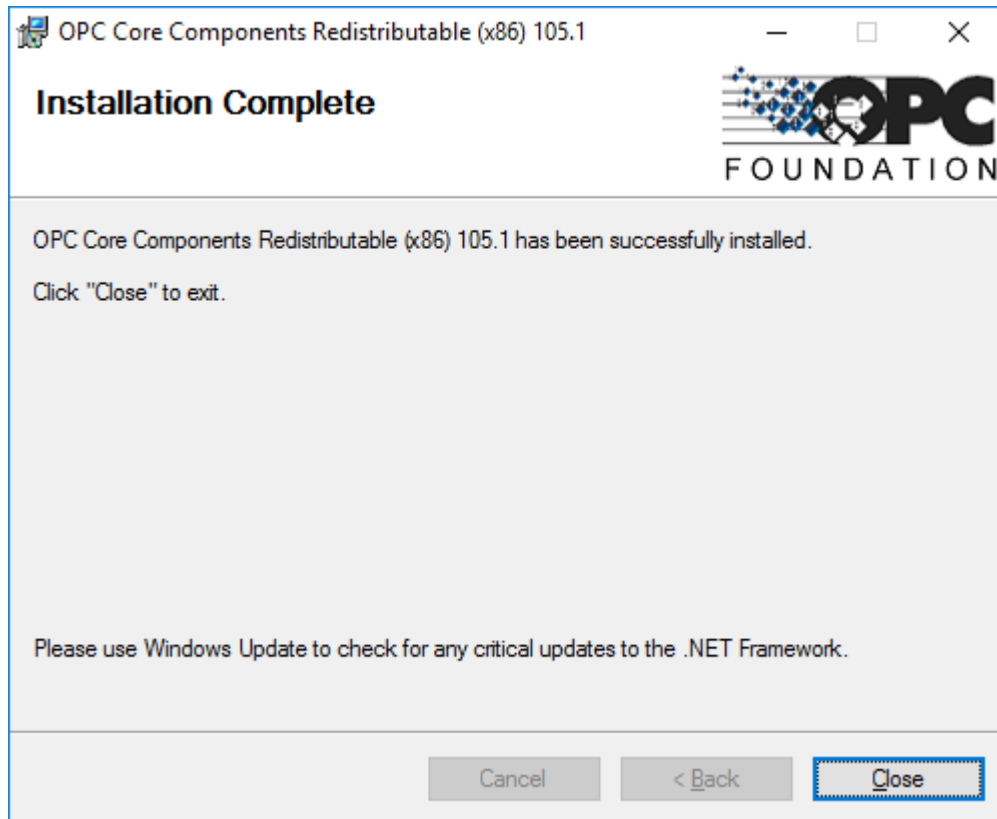


Figure 15 – When the installation is complete, the wizard's final dialog will appear

To close the wizard, click **Close**.

Installing Microsoft .NET SDK

The **MasterSCADA 4D** installation wizard will automatically install **Microsoft.NET SDK** if the product is not yet installed on your PC:

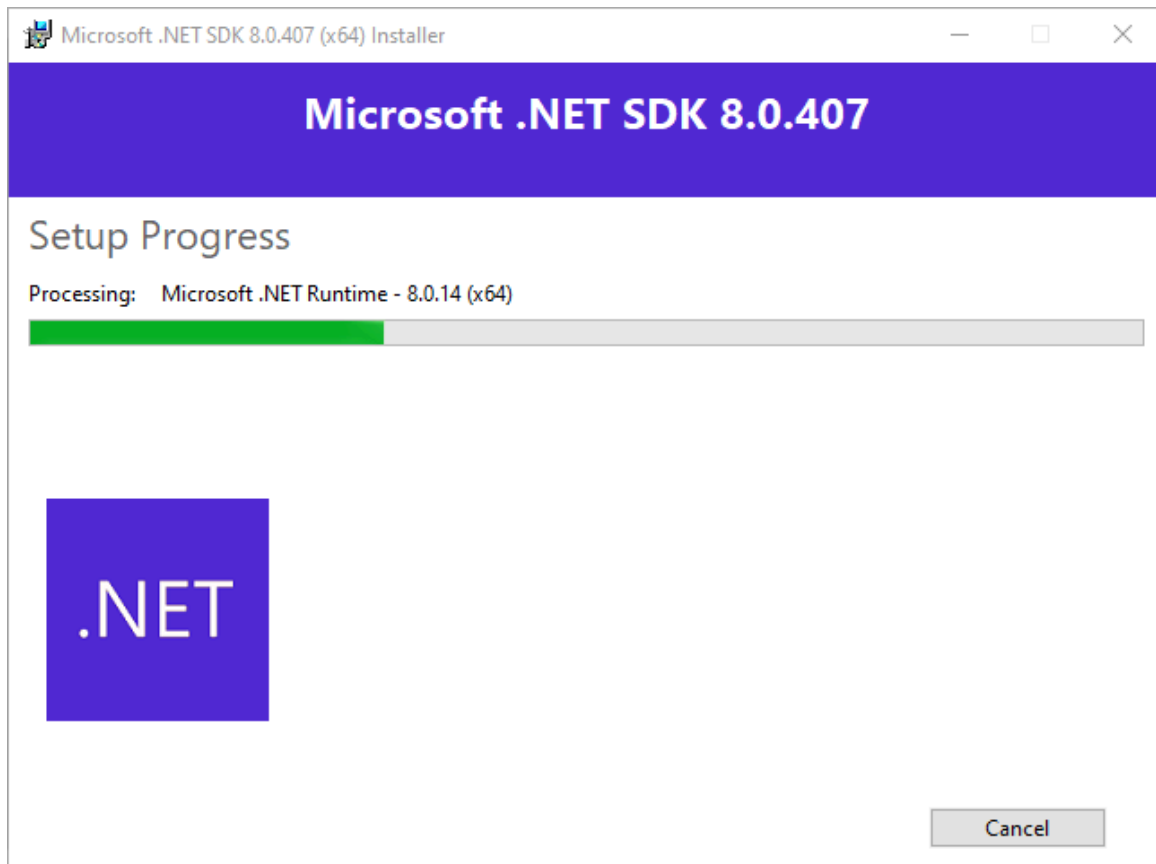


Figure 16

You may be required to restart the PC after installing **Microsoft.NET SDK**.

Installing MasterSCADA 4D runtime

The runtime can be installed on a device without installing the IDE. The runtime installation method will depend on the device OS.

- [Windows](#)
- [Linux](#)
- [Windows Embedded](#)

Installing on Windows OS

To install **MasterSCADA 4D RT** runtime on **Windows OS**, one installer is required based on the type of license you use. The following options are available:

- **MasterSCADA4D_RT_Demo.exe** - for the demo version;
- **MasterSCADA4D_RT_Key.exe** - for the version with [Guardant](#) key protection;
- **MasterSCADA4D_RT_Activation.exe** - for the versions with [Activation](#) protection. Starting from version 1.3.10 MasterSCADA 4D,

the activation mechanism on Windows OS has been switched to the BLAKE3 cryptographic algorithm. The runtime works with both the old activation file (before version 1.3.10) and the new format;

- **MasterSCADA4D_RT_RT32.exe** - for the version limited to 32 sampling points.

You can download the required installer from our technical support's **FTP server**. To access the **FTP server**, you must register with the [HelpDesk](#) technical support system.

The installation procedure is the same for all versions:

[Installing MasterSCADA 4D RT runtime](#)

Installing MasterSCADA 4D RT runtime

Starting the **MasterSCADA 4D RT** installation file opens the initial dialog of the installation wizard. Select a client language (the default is **Russian**) in the dialog box and **click** Next:

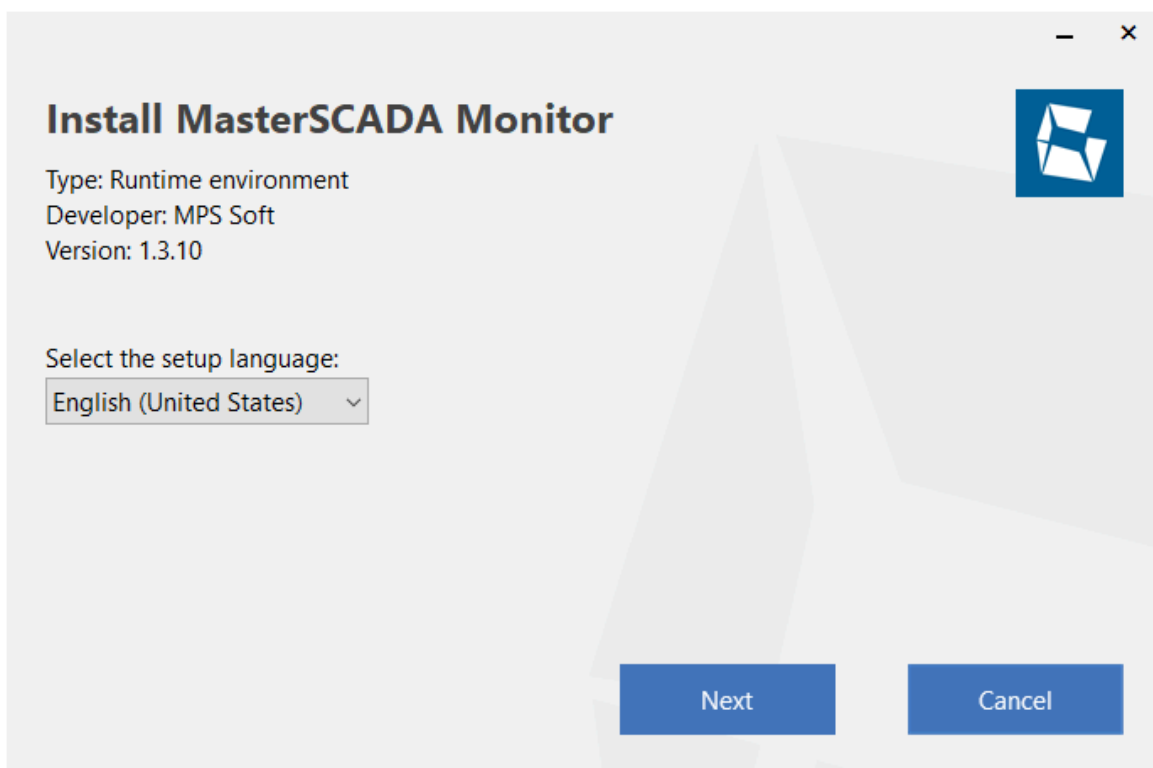


Figure 17

Then the license agreement dialog will open:

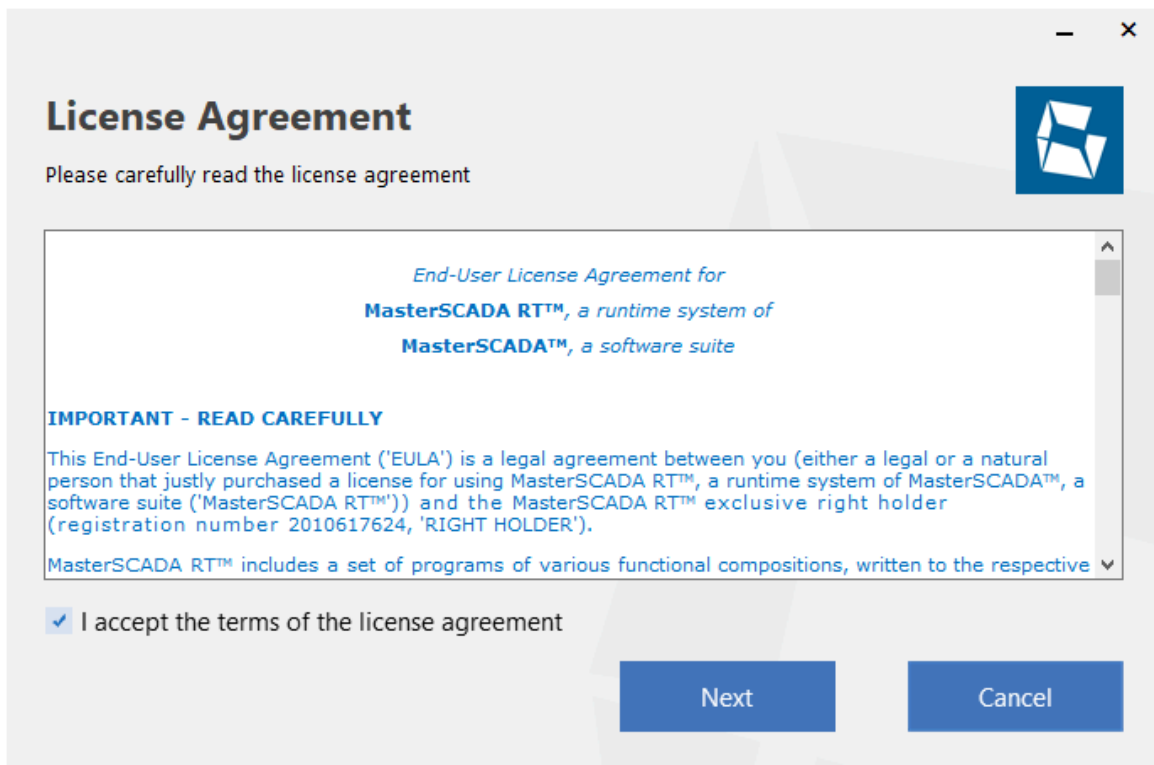


Figure 18 – Then the license agreement dialog will open

Read the text, check **I accept the terms in the license agreement**, and click **Next**. The following dialog will open:

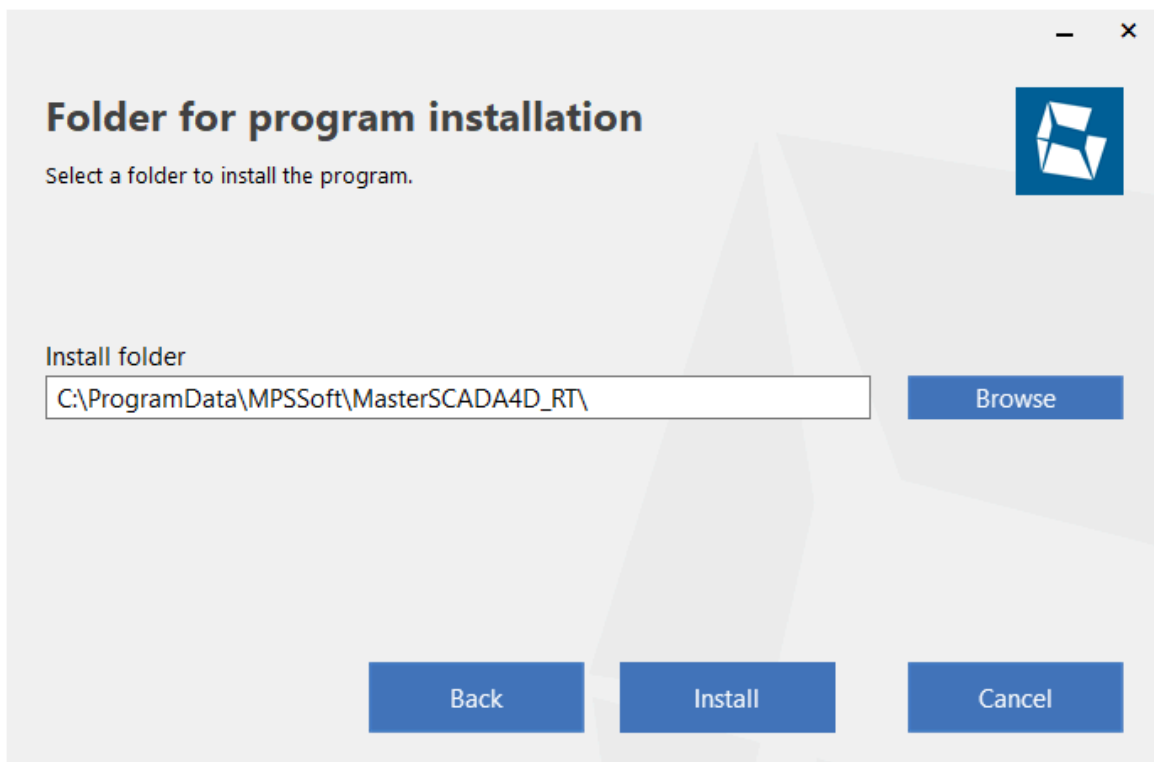


Figure 19

Here you can change the product installation folder by clicking **Browse**. The default folder is `C:\ProgramData\MPSSoft\MasterSCADA4D_RT\`.

 **Important!** When selecting the installation path, avoid folders with Cyrillic characters in their names.

Click **Install** to open the installation process dialog:

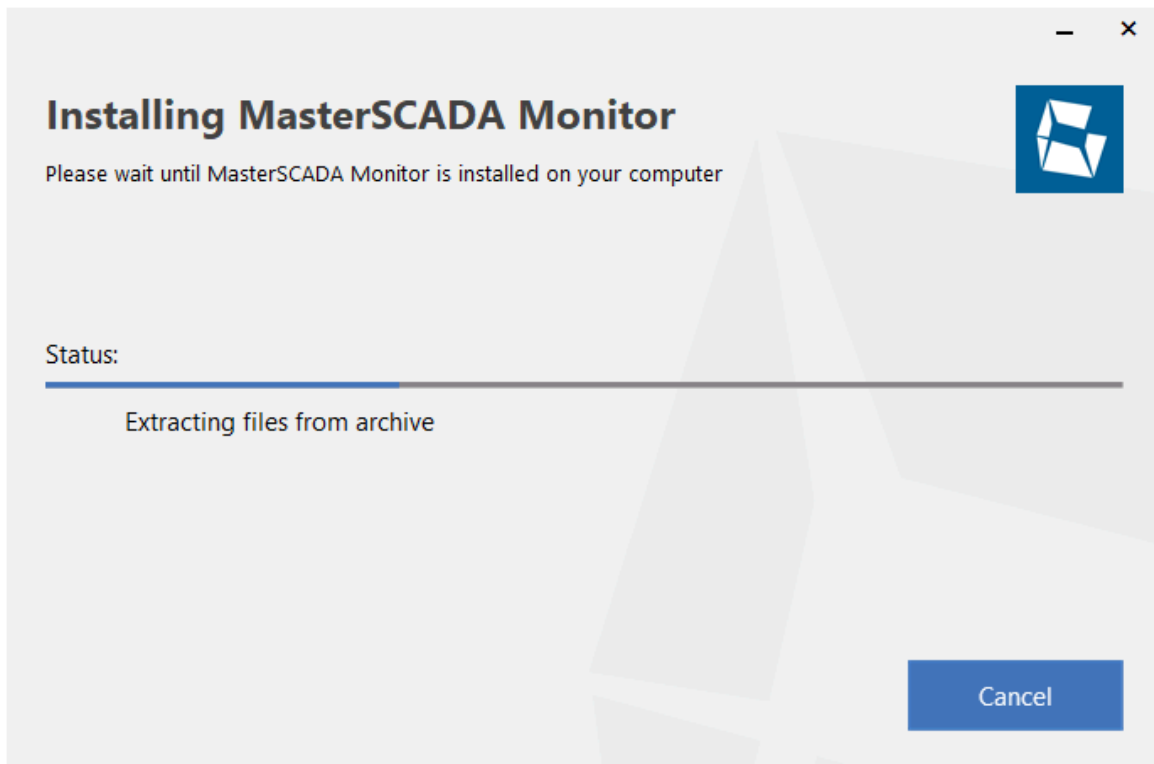


Figure 20 – Click Install to open the installation process dialog

You may need to allow the program to make changes to your device:

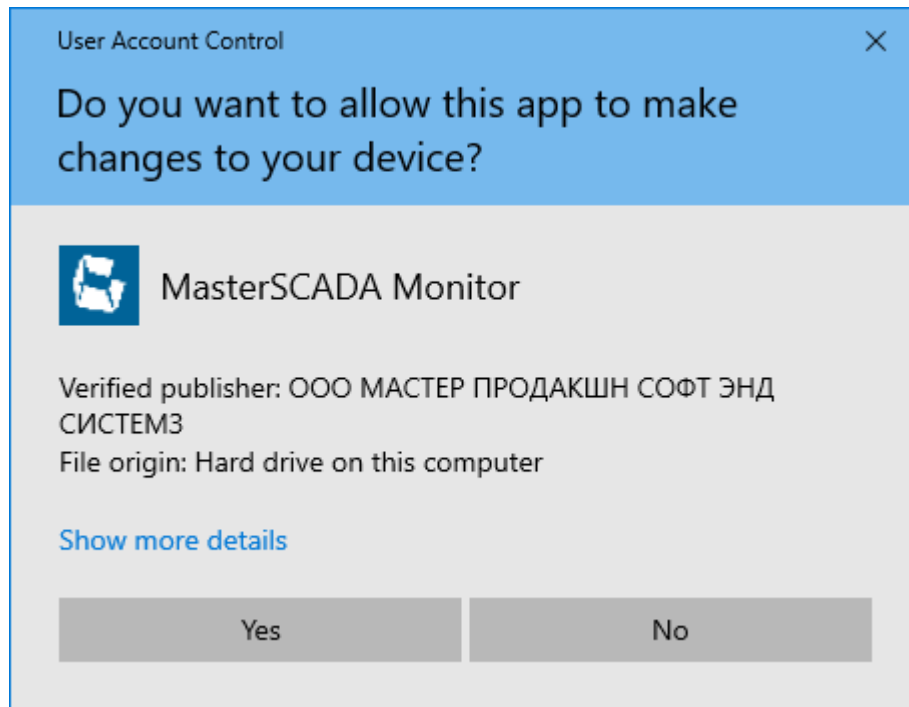


Figure 21 – You may need to allow the program to make changes to your device

Click **Yes** to continue the installation process.

If [OPC Core Components](#) and the **protection key** driver are not yet installed, they will be installed automatically.

Wait until the installation is complete and the last wizard dialog appears:

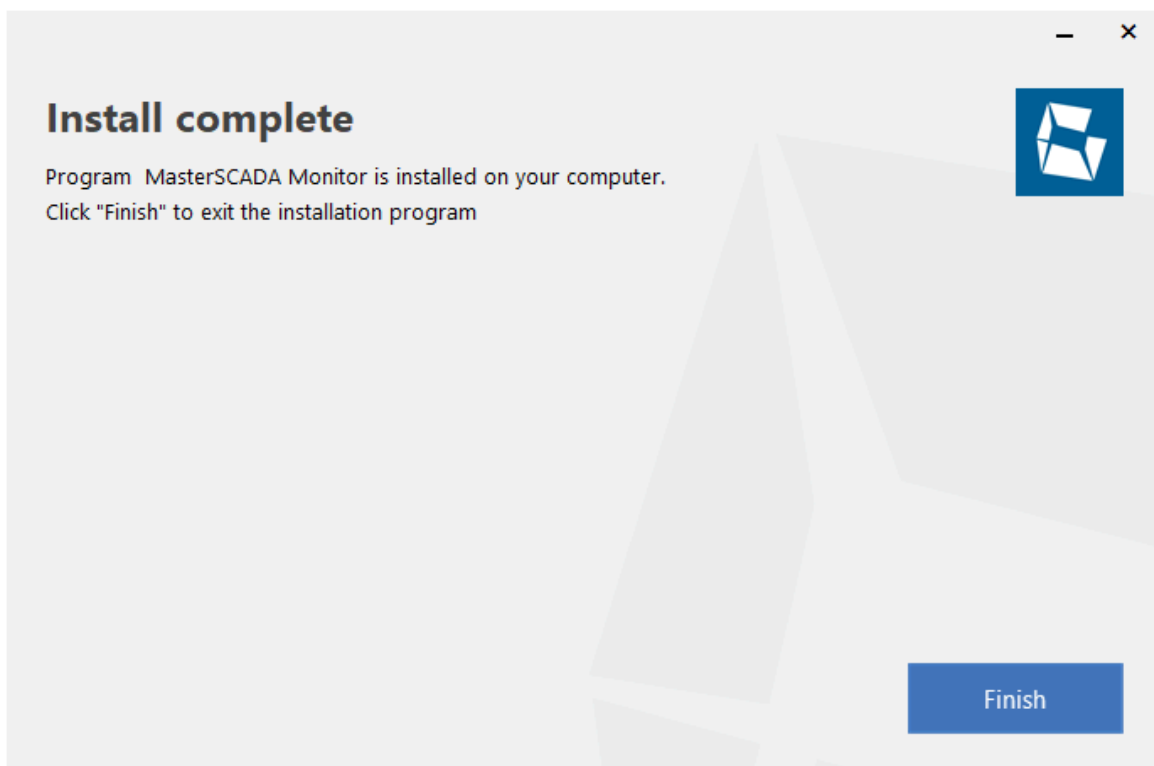


Figure 22 – Wait until the installation is complete and the last wizard dialog appears

To close the wizard, click **Finish**.

MasterSCADA 4D RT includes three components:

- **Monitor.Launcher** is an application that configures and launches the HMI client;
- **Monitor.Server** is an application designed for centralized runtime control;
- **Monitor.Host** is the machine where the runtime is installed, including the following processes: **mplc**, **nginx**, **rtsp**.

Once the runtime is installed, a shortcut of MasterSCADA Launcher will appear on the desktop and in the Start panel. The launcher is required to start MasterSCADA Monitor needed for the runtime control.

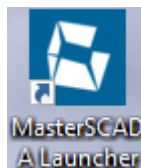


Figure 23

You can start the launcher from the hidden icons panel:

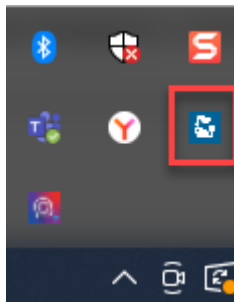


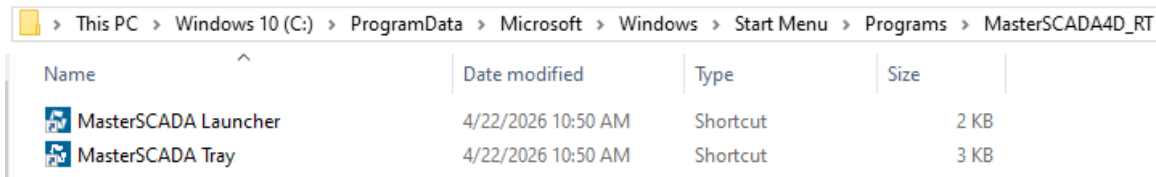
Figure 24 – You can start the launcher from the hidden icons panel

See also:\

MasterSCADA Monitor

Description of MasterSCADA 4D RT shortcuts

After completing installation, the wizard will create a program group at `C:\ProgramData\Microsoft\Windows\Start Menu\Programs\MasterSCADA4D_RT`, containing the following files:



The screenshot shows a Windows File Explorer window with the address bar path: This PC > Windows 10 (C:) > ProgramData > Microsoft > Windows > Start Menu > Programs > MasterSCADA4D_RT. The file list contains two items:

Name	Date modified	Type	Size
MasterSCADA Launcher	4/22/2026 10:50 AM	Shortcut	2 KB
MasterSCADA Tray	4/22/2026 10:50 AM	Shortcut	3 KB

Figure 25

- **MasterSCADA Launcher** starts the **MasterSCADA Launcher** application designed to configure and start the **HMI client** and **Monitor**;
- **MasterSCADA Tray** adds the **MasterSCADA Launcher** shortcut to the tray;

Project configuration, website, and server operation protocols are stored in the working folder at %<профиль пользователя>(user profile)%\AppData\Roaming\MPSSoft\MasterSCADA4D_RT\rt\Server\

 **See also: Using MasterSCADA 4D shortcuts**

- Runtime working folder

Updating the runtime version on Windows OS

To update the **MasterSCADA 4D RT** runtime version, you must delete the current version and reinstall it.

 **See also:** [Installing the runtime on Windows OS](#)

- [Uninstalling MasterSCADA 4D RT](#)

Uninstalling MasterSCADA 4D RT

To uninstall **MasterSCADA 4D RT**, go to the **Windows** control panel, open **Apps & features**, select **MasterSCADA Monitor**, and click **Uninstall**:

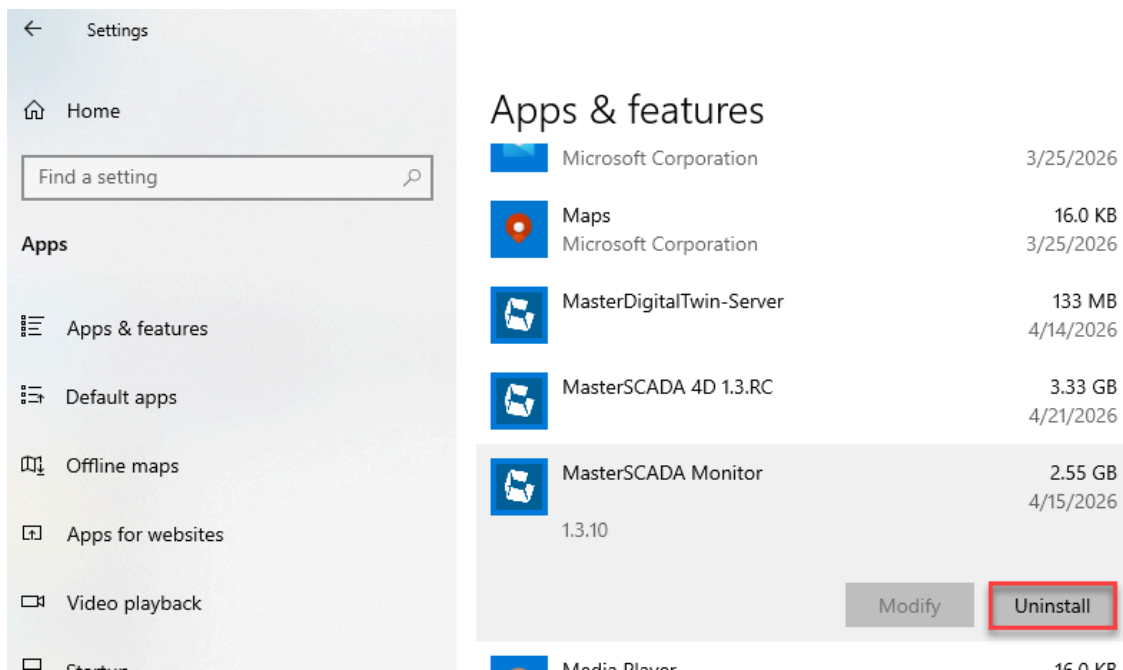


Figure 26

Installing MasterSCADA 4D RT on Linux

The installation procedure depends on the device architecture - while in some cases it may be enough to copy files to the working directory `/opt/mp4c4`, in others packages may need to be downloaded from the corresponding OS repositories.

When installing on a remote device, you will need an ssh connection to run Linux commands and an sftp connection to upload files.

The installation also differs between x86 and x64 devices with an individual **MasterSCADA 4D RT** installer for each architecture. The installer for the latter devices has a suffix such as `linux-x64`. Note also that if [Guardant](#) key protection is used, a separate **linux-key** installer will be available. Where [Activation](#) has been selected as the protection method, installers have no such suffix.

Important! Run-Time MasterSCADA 4D for Linux OS is included in the basic functionality of the Standard, Professional, and Enterprise licenses.

The installation of **MasterSCADA 4D** on Linux operating system is performed in the same way:

- [Initial installation](#)
- [Runtime update](#)

- [Runtime uninstallation](#)

Installing Linux OS distributions

MasterSCADA 4D platform is compatible with Linux but the installation procedure may differ between OS distributions.

The installation of Linux distributions can be divided into two steps: [pre-installation procedure](#) and OS installation.

The OS installation procedure for some of the distributions is explained in the following sections:

- [Installing Debian OS](#)

When installing distributions, pay particular attention to selecting the interface shell. If you are going to limit access to the OS in your project, MATE graphical shell is the best choice for most Linux distributions (except for Astra Linux). This setting will not work on other graphical shells.

Preparing for OS installation

For distribution kits the pre-installation procedure is the same. It includes the steps below:

- Downloading an installation image;
- Creating an installation medium;
- BIOS (UEFI) settings.

Downloading an installation image

A distribution kit should be selected depending on your OS bit version and availability of the software license.

Linux distribution installation scripts can be downloaded from the help desk FTP server. To access the FTP server, you must register with the [HelpDesk](#) technical support system.

You will also need to download an ISO installation image from the official manufacturer websites. For more details on this step, see the installation section for each individual distribution:

- [Downloading the Debian installation image](#)

Creating an installation medium

You can use any of the following as an installation medium:

- CD-ROM/DVD-ROM/BD-ROM;
- **USB** memory card;
- Network;
- Hard disk;
- **Un*x** or **GNU** system (This installation method may be useful if you have some unsupported equipment or if your machines' operation must not be interrupted).

This manual will explain how to create an installation medium in a way that is suitable for **CDs**, **DVDs** and **USB** cards.

Once the installation image is downloaded, you need to write it to the required installation medium. There are many programs for that such as [Rufus](#), etc. Visit the product website to see how an ISO image is **written to a medium**.

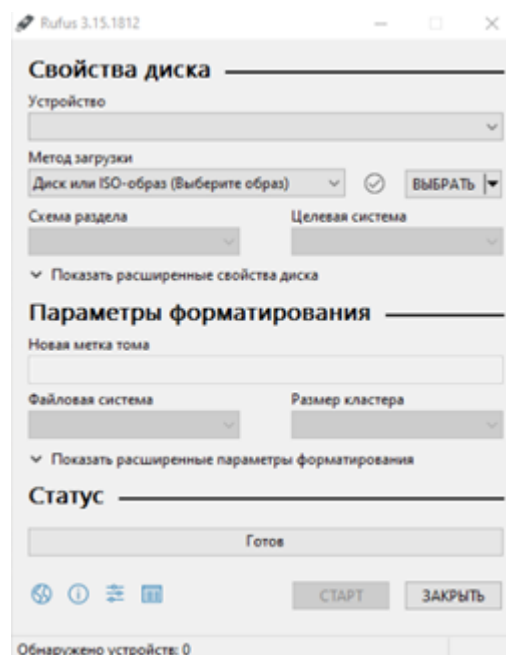


Figure 27

BIOS (UEFI) settings

After that, restart the destination system where the OS will be installed and go to its **BIOS** or **UEFI** settings. Set the boot source priority in the **Boot** section: as the **1st Boot Device** select the medium with the image written on it. Make sure to save all settings before exiting.

Installing Debian OS

Debian is a GNU/Linux distribution that is widely used on servers and is the basis of many other **Linux** distributions.

This manual outlines the installation procedure for **Debian 13** 64-bit version.

The OS installation includes two steps: [OS pre-installation procedure](#) and [OS installation](#).

Downloading the Debian installation image

First, [visit the Debian official website](#) and select the needed release and architecture of the installation image to download. The last stable release is available on the official website home page. You may download the distribution image as follows: **CD** or **DVD**, **ISO image**, **network downloading** and **Live installation**. The manual outlines installation of a **64-bit CD version**.

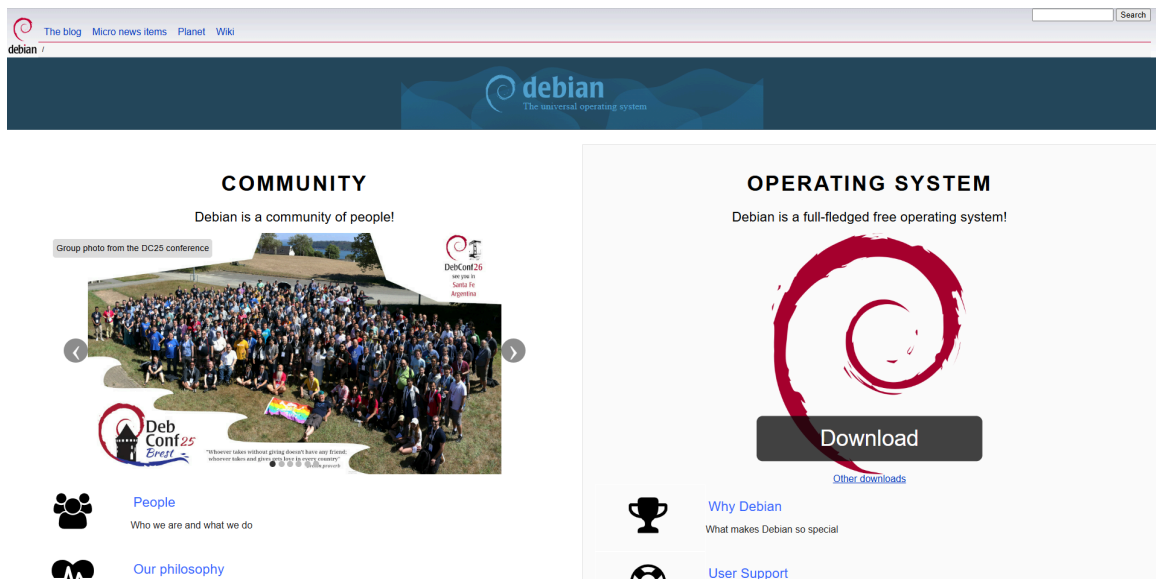


Figure 28

Click the CD/USB ISO images link to proceed to downloading the distribution image.

Buy CDs, DVDs or USB sticks from a vendor of Debian installation media

Many of the vendors sell the distribution for less than US\$5 plus shipping (but not always internationally). Here are the basic advantages of CDs:

- You can install on machines without an Internet connection.
- You can install Debian without downloading all packages yourself.

Buy a computer with Debian pre-installed

There are a number of advantages to this:

- You don't have to install Debian.
- The installation is pre-configured to match the hardware.
- The vendor may provide technical support.

Use a Debian cloud image

An official **cloud image**, built by the cloud team, can be used on:

- your OpenStack provider, in qcow2 or raw formats.

64-bit AMD/Intel (qcow2, raw), 64-bit ARM (qcow2, raw), 64-bit Little Endian PowerPC (qcow2, raw), 64-bit little-endian RISC-V (qcow2, raw)

- a local QEMU virtual machine, in qcow2 or raw formats.

64-bit AMD/Intel (qcow2, raw), 64-bit ARM (qcow2, raw), 64-bit Little Endian PowerPC (qcow2, raw), 64-bit little-endian RISC-V (qcow2, raw)

- Amazon EC2, either as a machine image or via the AWS Marketplace.

Amazon Machine Images, AWS Marketplace

- Microsoft Azure, on the Azure Marketplace.

Debian 12 ("Bookworm"), Debian 11 ("Bullseye")

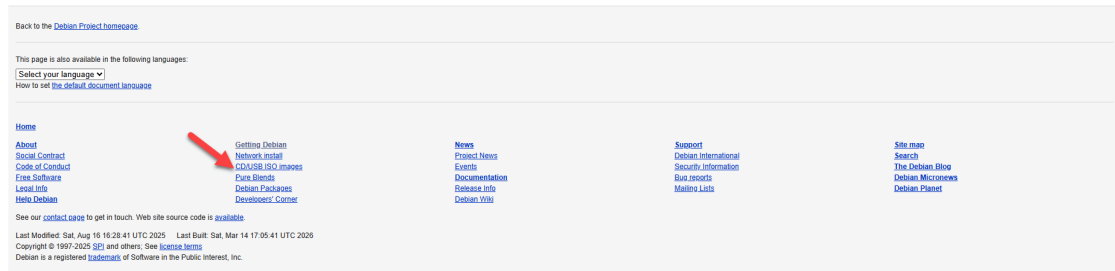


Figure 29

On the link menu, select Download CD/DVD images using BitTorrent.

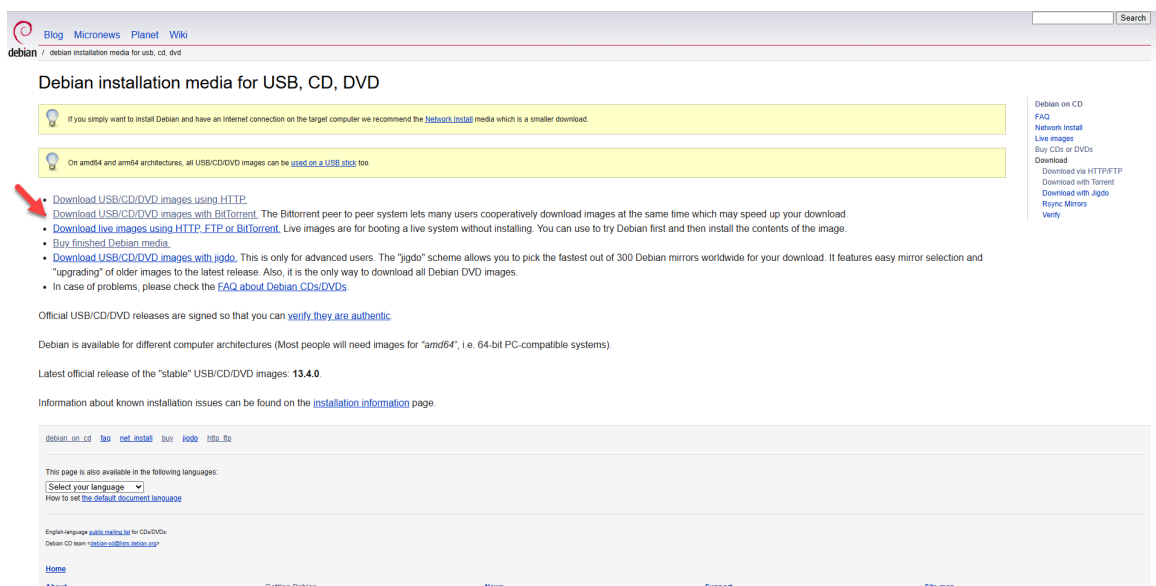


Figure 30

Select the CD image corresponding to ISO amd64 version.

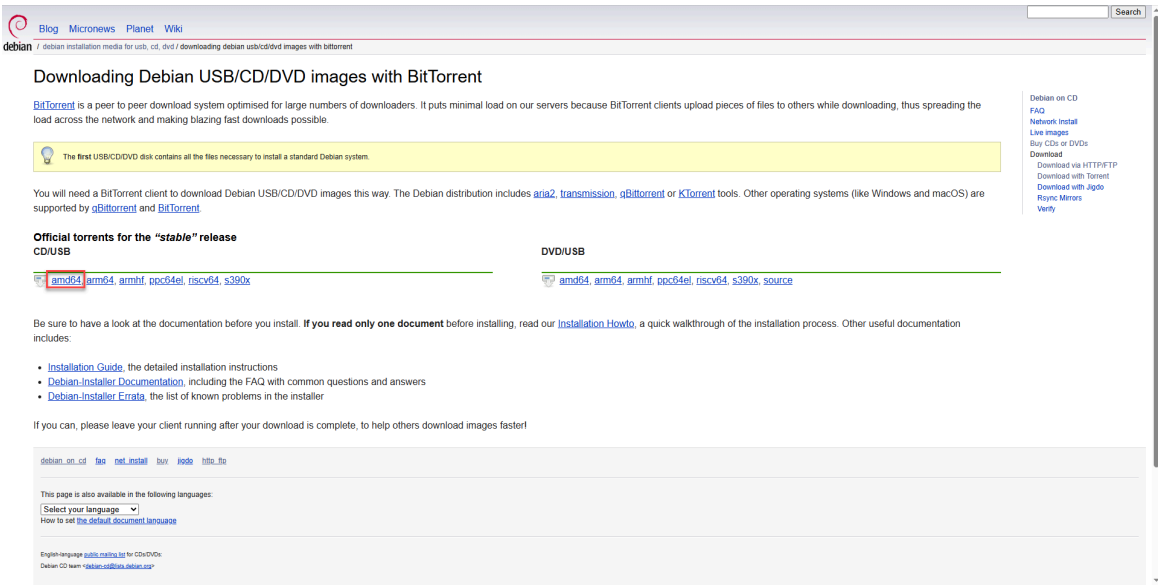


Figure 31

Select the desired image to download.

Name	Last modified	Size
Parent Directory	-	-
SHA256SUMS	2026-03-14 18:40	628
SHA256SUMS.sign	2026-03-14 18:41	833
SHA512SUMS	2026-03-14 18:40	1.09K
SHA512SUMS.sign	2026-03-14 18:41	833
debian-13.4.0-amd64-netinst.iso.torrent	2026-03-14 14:54	59K
debian-edu-13.4.0-amd64-netinst.iso.torrent	2026-03-14 14:54	60K
debian-mac-13.4.0-amd64-netinst.iso.torrent	2026-03-14 14:54	60K

Figure 32

OS installation

Installing the basic system

After booting BIOS from the CD-ROM, the Isolinux boot menu will appear. The Linux core has not yet been loaded at this point. The menu allows you to select the core to boot and enter parameters to pass to the process.

The first installation step is to select an interface for the OS installation process. There are two options: console (**Install**) and graphical (**Graphical Install**) installer. Select the one you need and press **Enter**.

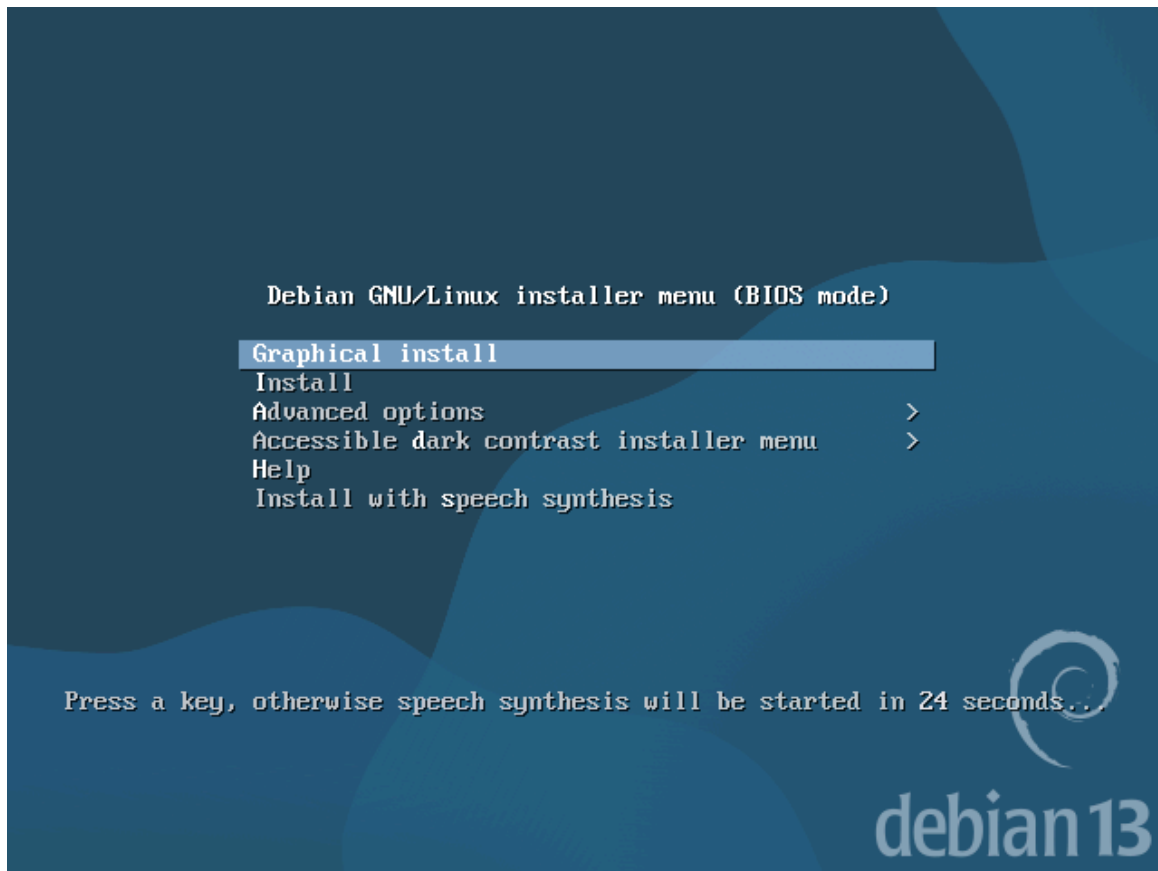


Figure 33

Selecting system installation language

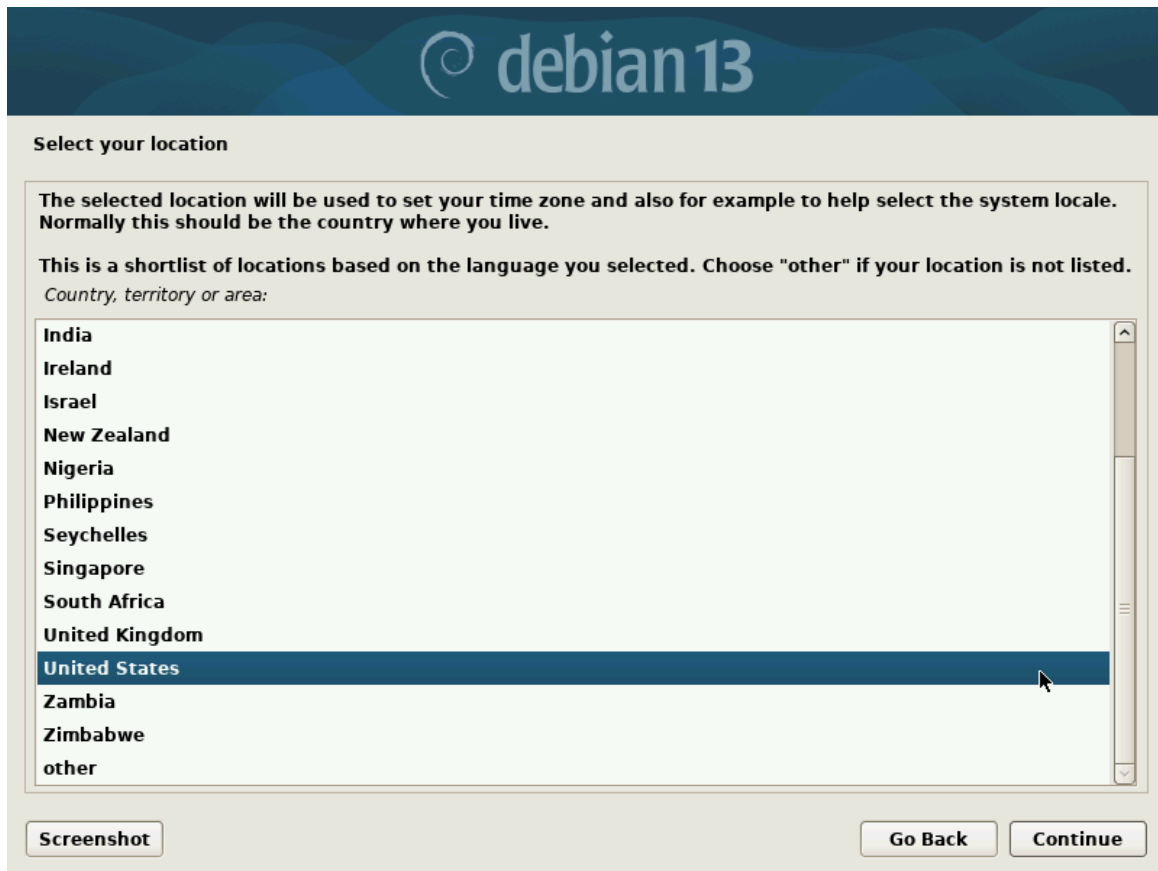
Select the language you need. After selecting the preferred installation language, click **Continue**.



Figure 34

Selecting location

Select the preferred location; it will determine the system time zone. After that, click **Continue**.

*Figure 35*

Configuring the keyboard

Select your preferred keyboard layout language.

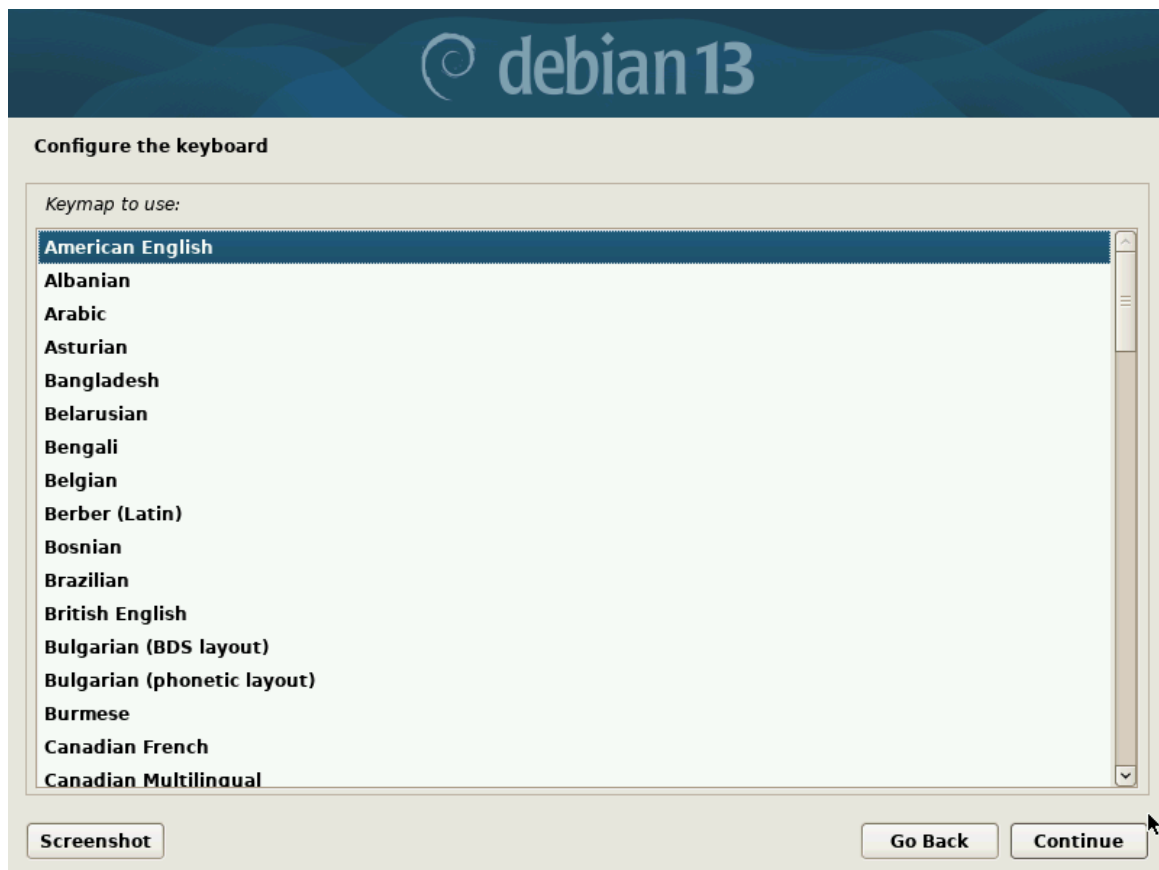


Figure 36

Next, wait while the installation program attempts to automatically configure the network.



Figure 37

Setting network parameters: host and domain names

For your PC to be identified in the network, enter a one-word user name in Latin letters.



The image shows a window titled "Configure the network" from the Debian 13 installer. The window has a dark blue header with the Debian logo and "debian 13" text. Below the header, the title "Configure the network" is displayed. The main content area contains the following text: "Please enter the hostname for this system." followed by a detailed explanation of hostnames. Below this is a label "Hostname:" and a text input field containing "DebianPC". At the bottom of the window, there are three buttons: "Screenshot" on the left, and "Go Back" and "Continue" on the right.

Configure the network

Please enter the hostname for this system.

The hostname is a single word that identifies your system to the network. If you don't know what your hostname should be, consult your network administrator. If you are setting up your own home network, you can make something up here.

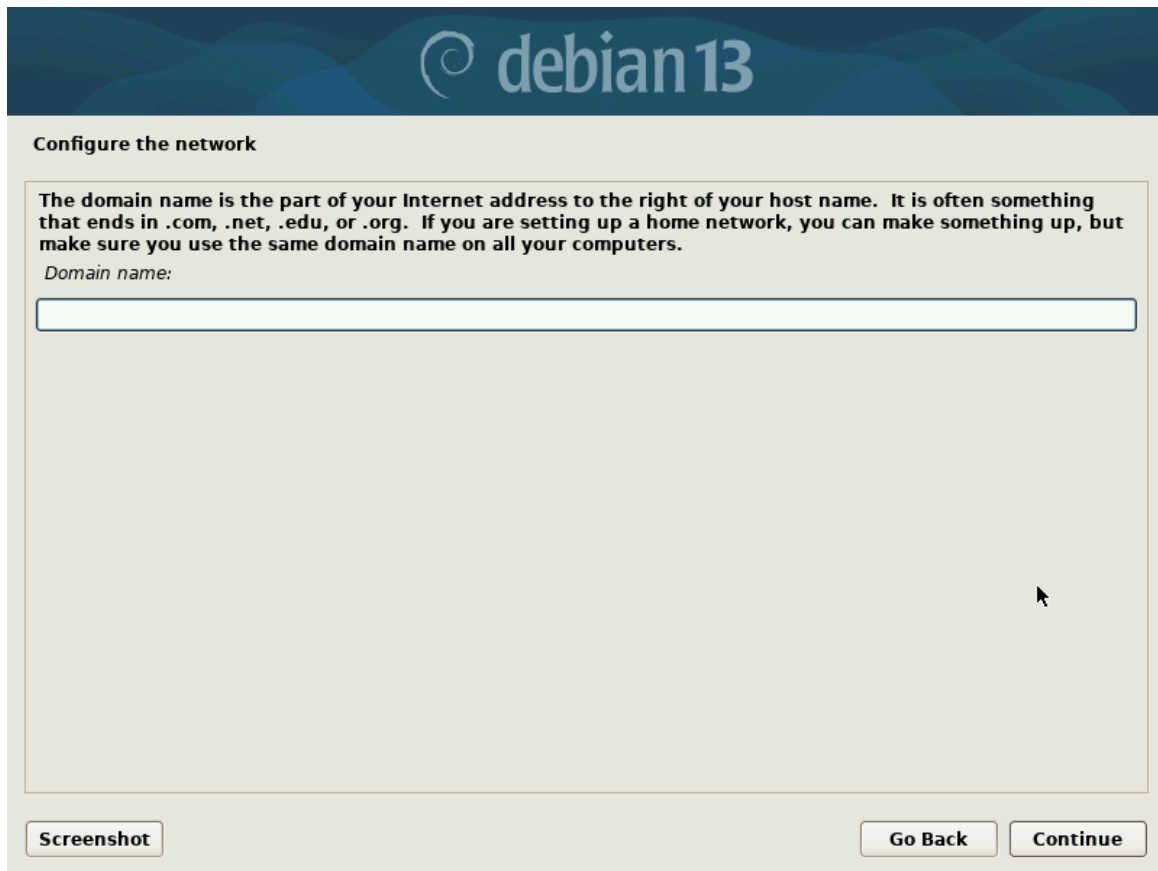
Hostname:

DebianPC

Screenshot Go Back Continue

Figure 38

The next installation window will prompt you to enter the domain name. In some cases, the installer can detect the domain name automatically.



The image shows a screenshot of the Debian 13 network configuration window. The window has a dark blue header with the Debian logo and the text "debian 13". Below the header, the title "Configure the network" is displayed. The main content area contains a text box with the following text: "The domain name is the part of your Internet address to the right of your host name. It is often something that ends in .com, .net, .edu, or .org. If you are setting up a home network, you can make something up, but make sure you use the same domain name on all your computers." Below this text is a label "Domain name:" followed by a large, empty text input field. At the bottom of the window, there are three buttons: "Screenshot" on the left, and "Go Back" and "Continue" on the right.

Configure the network

The domain name is the part of your Internet address to the right of your host name. It is often something that ends in .com, .net, .edu, or .org. If you are setting up a home network, you can make something up, but make sure you use the same domain name on all your computers.

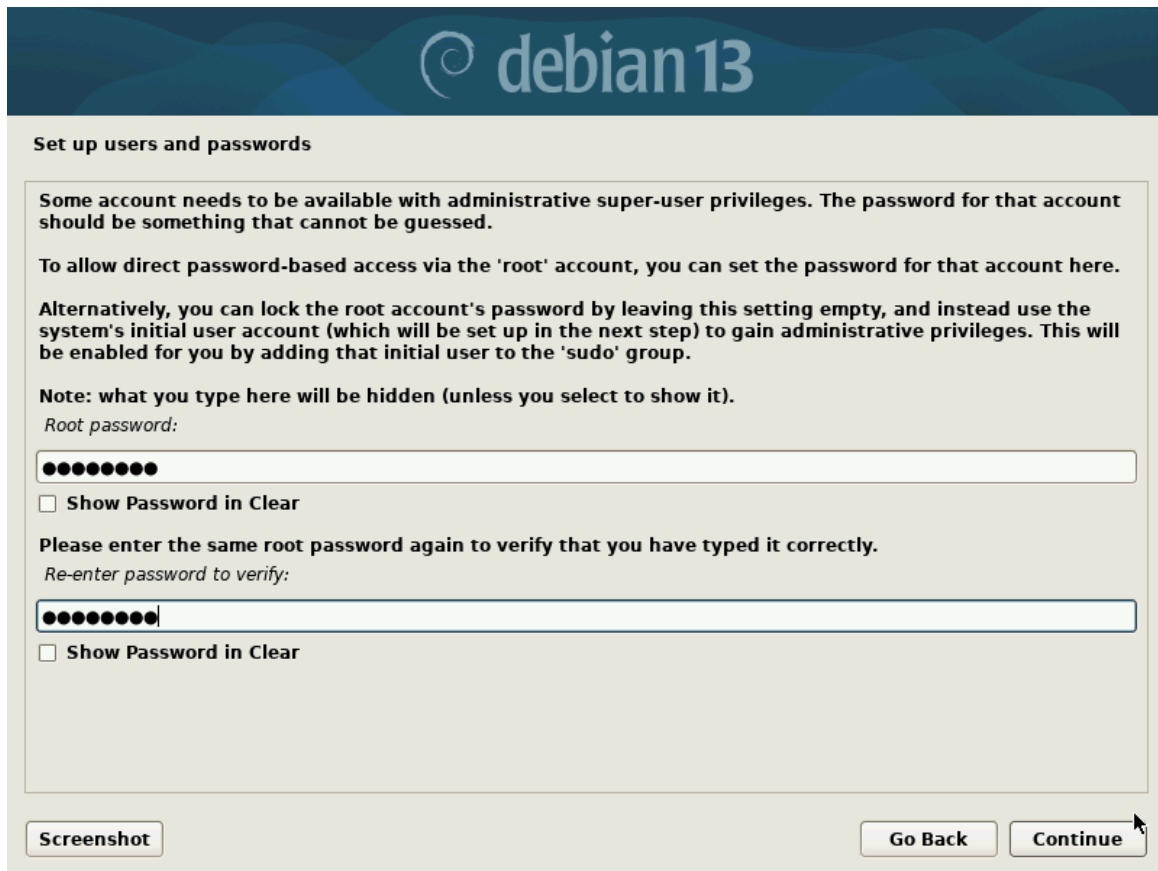
Domain name:

Screenshot Go Back Continue

Figure 39

Setting a root superuser password in Debian

In the next window, enter a password for the root superuser.



Set up users and passwords

Some account needs to be available with administrative super-user privileges. The password for that account should be something that cannot be guessed.

To allow direct password-based access via the 'root' account, you can set the password for that account here.

Alternatively, you can lock the root account's password by leaving this setting empty, and instead use the system's initial user account (which will be set up in the next step) to gain administrative privileges. This will be enabled for you by adding that initial user to the 'sudo' group.

Note: what you type here will be hidden (unless you select to show it).

Root password:

●●●●●●●●

☐ Show Password in Clear

Please enter the same root password again to verify that you have typed it correctly.

Re-enter password to verify:

●●●●●●●●

☐ Show Password in Clear

Screenshot

Go Back

Continue

Figure 40

Setting a regular user account and password

Here you will create a limited user account. Enter user name and account name.



Set up users and passwords

A user account will be created for you to use instead of the root account for non-administrative activities.

Please enter the real name of this user. This information will be used for instance as default origin for emails sent by this user as well as any program which displays or uses the user's real name. Your full name is a reasonable choice.

Full name for the new user:

Screenshot Go Back Continue

Figure 41



Set up users and passwords

Select a username for the new account. Your first name is a reasonable choice. The username should start with a lower-case letter, which can be followed by any combination of numbers and more lower-case letters.

Username for your account:

Screenshot Go Back Continue

Figure 42

In the next window, enter a local user password.



The image shows a window titled "Set up users and passwords" from the Debian 13 installer. The window has a dark blue header with the "debian 13" logo. The main content area is light beige and contains two password input sections. The first section is titled "Make sure to select a strong password that cannot be guessed." and "Choose a password for the new user:". It features a password input field with ten black dots, a checkbox labeled "Show Password in Clear", and a "Screenshot" button. The second section is titled "Please enter the same user password again to verify you have typed it correctly." and "Re-enter password to verify:". It also has a password input field with ten black dots, a checkbox labeled "Show Password in Clear", and a "Screenshot" button. At the bottom right, there are "Go Back" and "Continue" buttons.

Figure 43

Setting the time

Next, select a time zone.



Figure 44

Selecting the disk partitioning method

At this step, the installer will prompt you to select one of the following disk partitioning methods:

- use the entire disk (automatic partitioning of the entire disk);
- use the entire disk and set up **LVM** (automatic **LVM**-based partitioning of the entire disk);
- use the entire disk and set up encrypted **LVM** (**LVM**-based partitioning and disk encryption);
- manual method (allows you to create custom partitions).

Select the method suitable for your setup

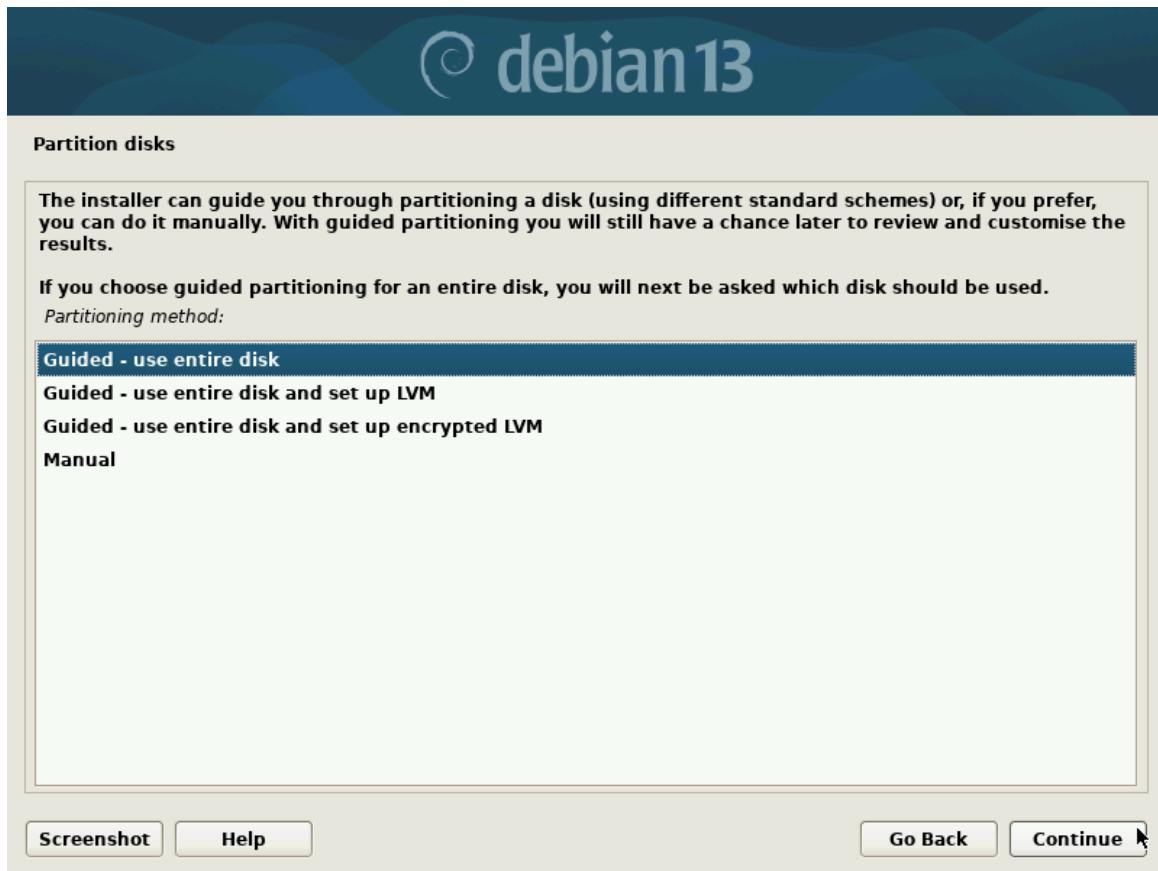


Figure 45

Next, select the disk to partition.



Figure 46

Select the disk partitioning scheme.

You may want to arrange the disk space for the OS in a certain way, e.g. allocate separate disk partitions for the primary root partition `/`, directory `/home`. Such partitioning helps isolate one partition from another, which can be useful in some cases. If for example the home catalog (`/home`) placed in a separate partition runs out of space, the system will still be able to function normally because the root partition is not affected. A separate partition for `home` is also a matter of convenience as you will be able to reinstall the operating system and at the same time keep your user data.

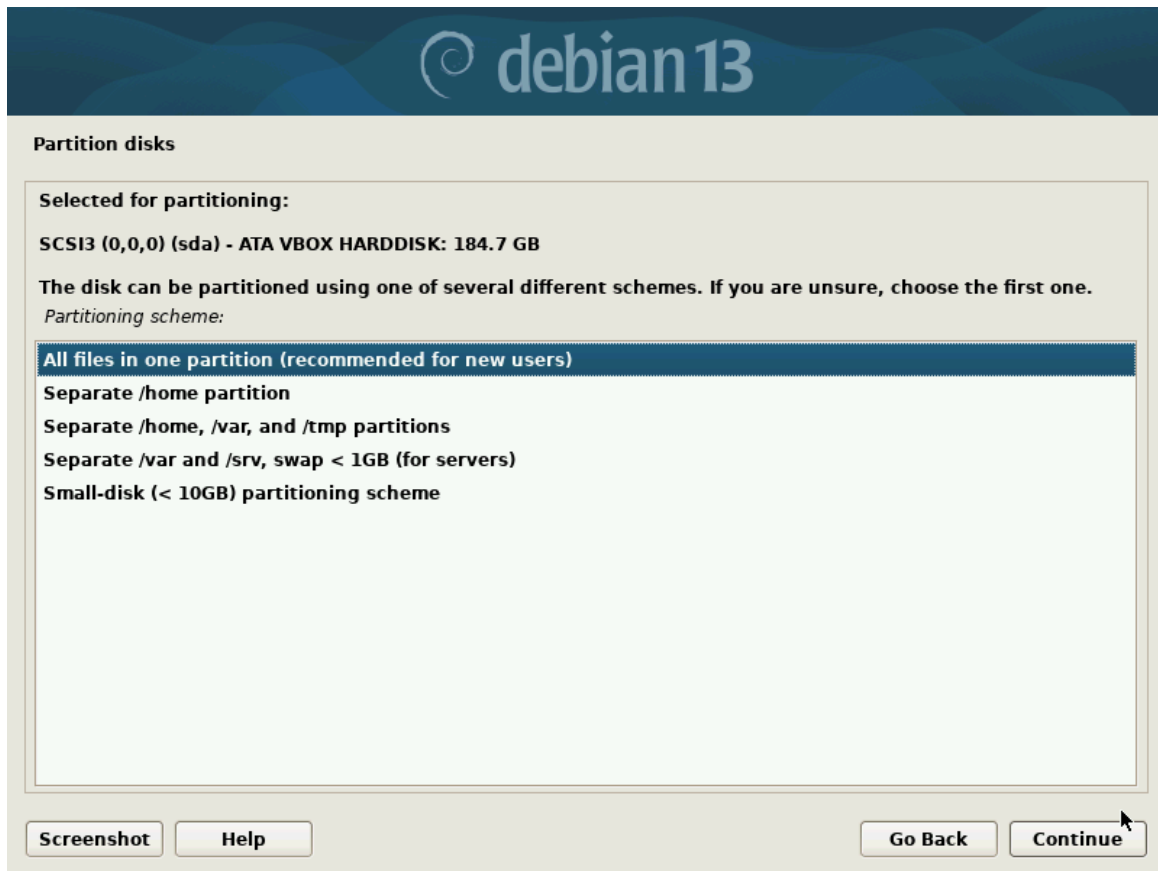


Figure 47

A window with the list of set partitions appears. You may change individual settings for each partition. Review the settings, finish the partitioning process, and proceed to save the changes to the disk.



Figure 48

The window below shows the partition table summary. Check it and select **Yes** to write the changes to the disk.

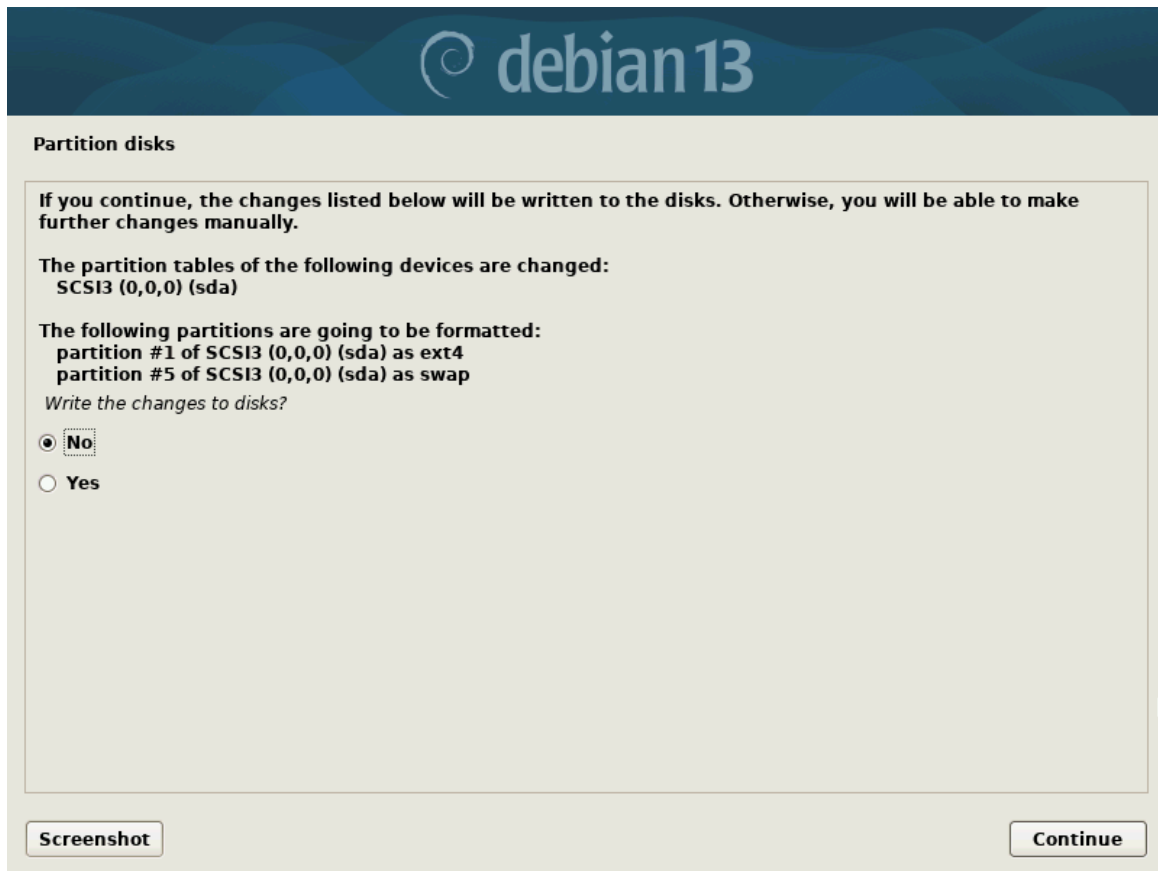


Figure 49

Now that disk partitioning is finished, the installer will format the disk. Next, the necessary components of the basis **Debian** system will be loaded. Wait some time while the installation is in progress.



Figure 50

Configuring the package manager

When configuring the package manager, you will be asked a few questions, whether you would like to use other **CDs** or **DVDs** as application sources. If there are no additional media, select **No** and click **Continue**.



Figure 51

Next, select a region and a **repository** - the location from which system components and updates will be downloaded. Select **deb.debian.org** if you are unsure which mirror provides the best connection.



Figure 52



Figure 53

In the next window, provide information on your **HTTP proxy server** if you are going to use it. If your system does not use a proxy server, continue without filling anything in.



The image shows a terminal window titled "debian 13" with a blue header. The main content area is titled "Configure the package manager". It contains the following text: "If you need to use a HTTP proxy to access the outside world, enter the proxy information here. Otherwise, leave this blank." followed by "The proxy information should be given in the standard form of 'http://[user][:pass]@host[:port]/'." and "HTTP proxy information (blank for none):". Below this text is a large, empty rectangular input field. At the bottom of the window, there are three buttons: "Screenshot" on the left, and "Go Back" and "Continue" on the right. A mouse cursor is visible pointing at the "Continue" button.

Figure 54

Next, you will be prompted to participate in an anonymous package poll from **Debian** distribution developers; select **No** and click **Continue**.

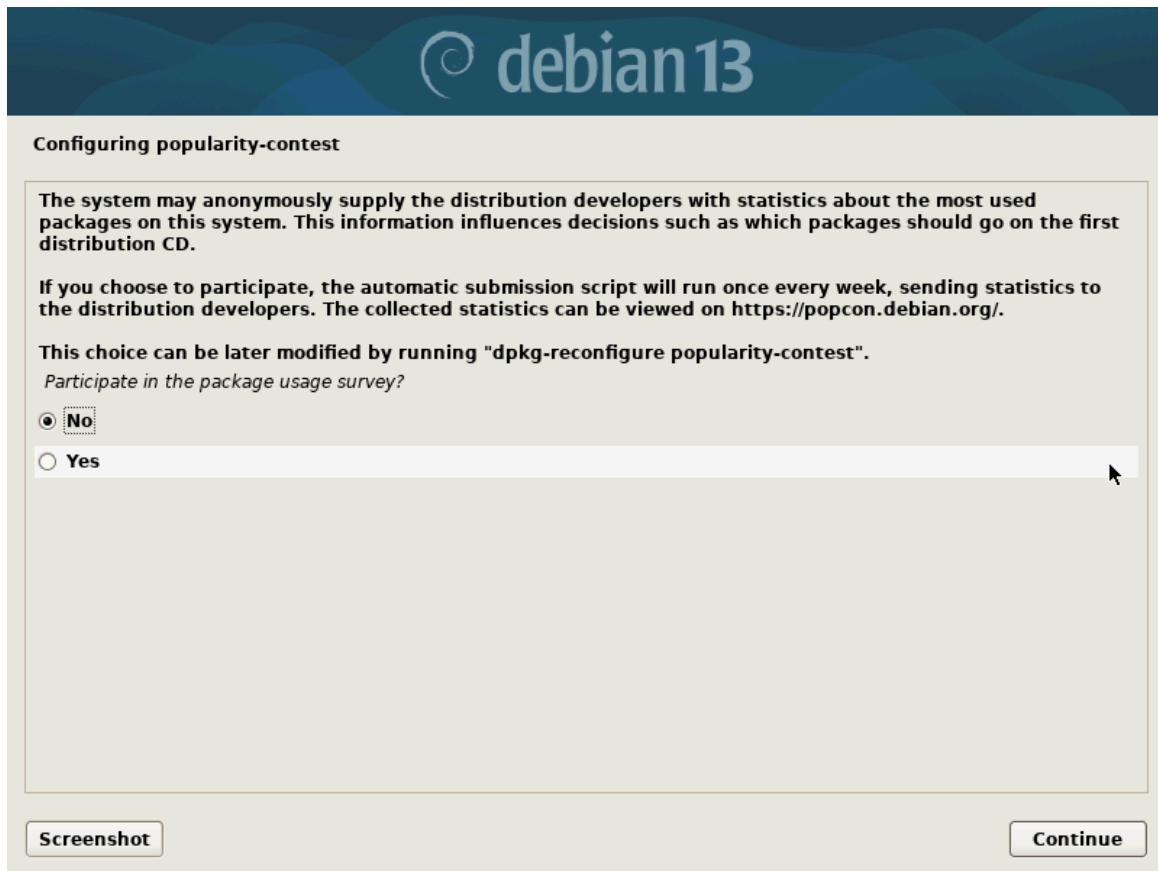
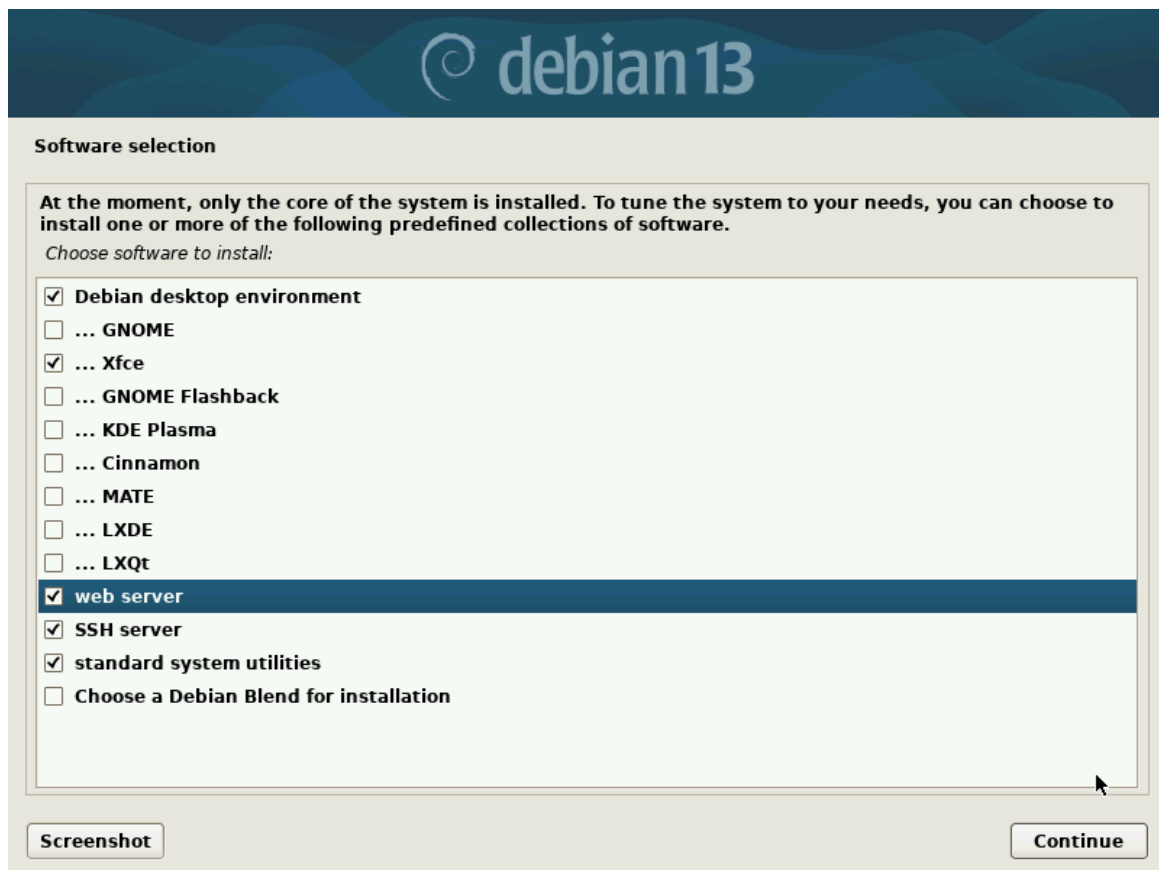


Figure 55

Selecting additional software

Select software. You can leave the default software selection for the use of MasterSCADA 4D runtime. If your device will be used as a **web server**, select the corresponding check box.

🔗 **Important!** If you are going to limit access to the operating system in your project, select the MATE graphical shell. This setting will not work on other graphical shells.

*Figure 56*

Installing the GRUB loader

In the window that opens next, select whether to install the **GRUB loader** or not. If you only have this distribution package installed on the hard disk, the installation is required. To do it, simply click **Yes**.

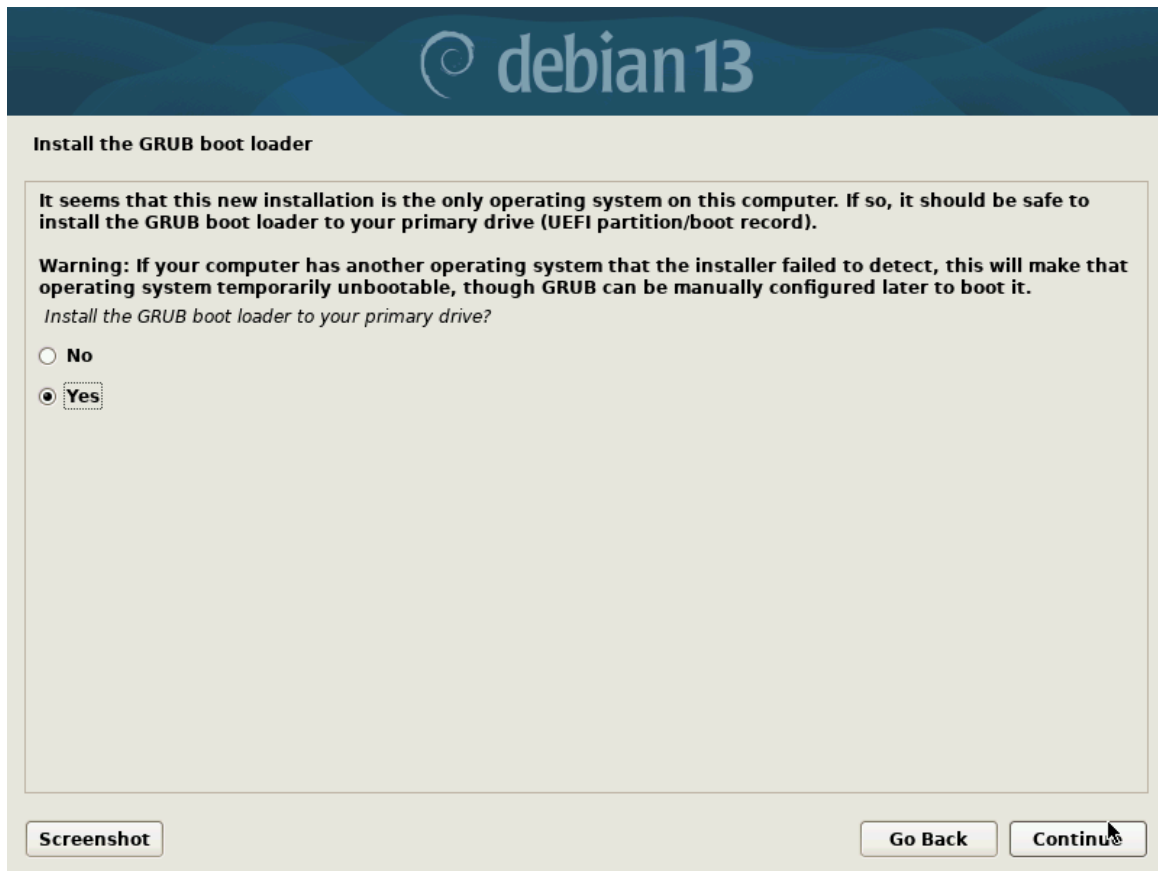


Figure 57

The next step is to select a hard disk on which to install the **Grub** loader.



Figure 58

The installation of **Debian** is now complete. Just click Continue; this will restart the system.



Figure 59

After the restart, the user login window will appear.

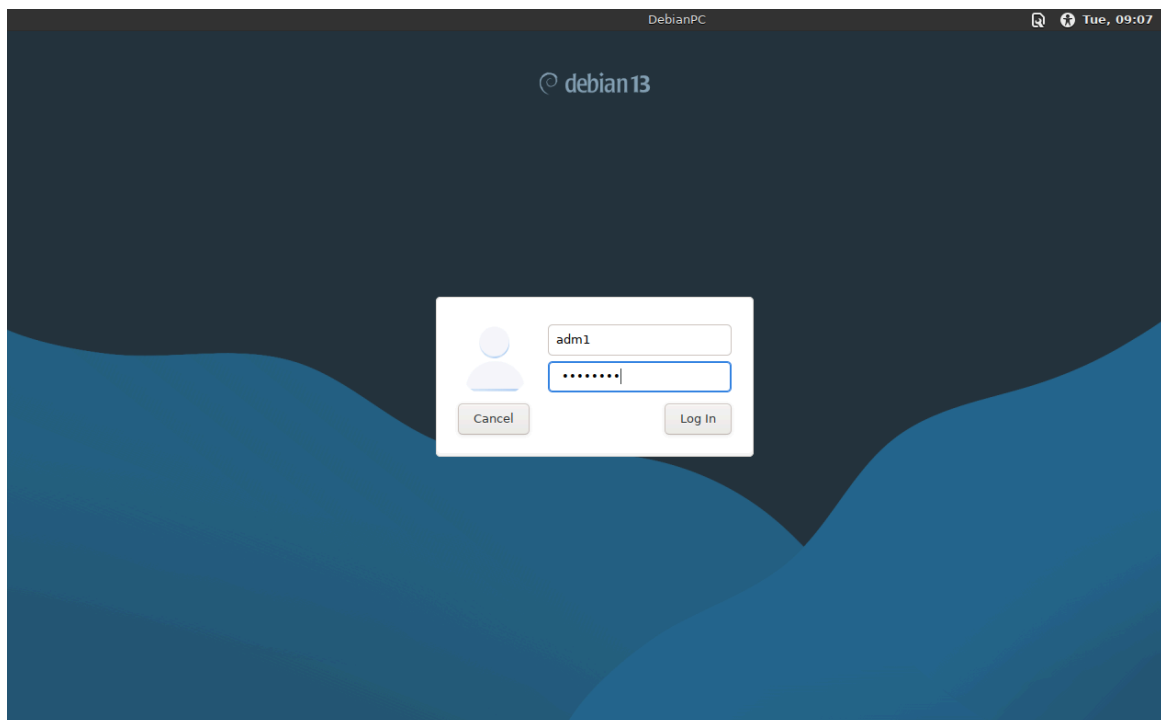


Figure 60

Installing on Linux OS

MasterSCADA 4D RT runtime for Linux OS is a set of files to be loaded on your device with the necessary components to be included in autostart. MasterSCADA 4D RT will then start automatically after you restart the operating system.

Such OS are most commonly used in PLCs so this form factor is mentioned herein, although this manual also applies to other devices with such OS.

Separate installation kits for the main supported PLCs, allowing for specific features of such PLCs, are available on the help desk **FTP server**. To access the FTP server, register with the [HelpDesk](#) technical support system.

Runtime installation files for various platforms can be found at: */support/Updates/Installation/MasterSCADA_4D/RunTime/*.

Installer contents

Installers comprise the following files:

- **install.sh** - runtime installer script;
- **mplc4.tar.gz** - files necessary for the operation of runtime modules (functional, archiving, protocol drivers and other components);
- **nginx.tar.gz** - web server files;
- **netcore.tar.gaz** - service files for building reports, supporting **C#** program execution, and generating **.Net** reports;
- **rtsp.tar.gaz** - files used to work with the **Video stream** visual component via **RTSP** protocol;
- **dotnet-runtime.tar.gaz** - .NET runtime files required for the Product's .NET components to function;
- **admin.tar.gz** - files for operating the **Master Security Unit** role model web interface.

Pre-installation steps

1. Place the installer files in the `/tmp` folder.
2. Open the terminal
3. In the terminal, switch to the superuser mode by running the **sudo su** command

```
administrator@astra-74104:~$ sudo su
[sudo] password for administrator:
root@astra-74104:/home/administrator#
```

Figure 61

4. If your OS uses **SELinux**, a kernel-level system of mandatory access control, it should be temporarily uninstalled by running the **yum remove selinux** command.
5. Go to the directory where the installer files are located:

```
root@astra-74104:/home/administrator# cd /tmp
root@astra-74104:/tmp# ls
admin.tar.gz          rtsp.tar.gz
dbus-9KGagDDy5P      runtime-fly-dm
dotnet-runtime.tar.gz ssh-Wu5ts9kw1cQx
install.sh            systemd-private-4d626f697666
mplc4.tar.gz          systemd-private-4d626f697666
netcore.tar.gz        systemd-private-4d626f697666
nginx.tar.gz          version.txt
```

Figure 62 – 5. Go to the directory where the installer files are located

6. Grant execute permission to the installer script using the following command **chmod u+x ./install.sh**

Some OS require additional steps before installation: [platform-specific installation guidelines](#), [specific guidelines for installation on Debian](#), and [specific guidelines for installation on ALT Linux](#).

Additional installation options

Installation option	Result
--i386-dep	Installs dependencies for the i386 architecture when mplc is installed as an x86 app on x64 platforms. Linux installer. Requires an internet connection.
--prefix=<path>	Path to install RT (default: /opt/mplc4).
--platform=<NAME>	Specify platform type (available values: PLC110, REGUL).
--http-port=<port>	Changes the web server port (default: 80).

Installation option	Result
--with-https	Enables HTTPS for Nginx configuration. Important! When both HTTP and HTTPS protocols are enabled simultaneously, the system automatically redirects all requests from the HTTP port to the port specified in the <code>HttpsWebServerPort</code> parameter of the configuration file <code>/opt/mplc4/monitor_config.json</code>.
--with-hsts	Enables HSTS in Nginx. If this option is used, the browser remembers that HTTP is not allowed to be used after accessing the web server with HSTS enabled. Even if HTTPS is not configured on the server, the browser will forcibly use HTTPS. To remove this restriction, you will need to clear your browser cache.
--without-nginx	Disables Nginx installation.
--nowdt	Enables the <code>/nowdt</code> RT start option.
--start-delay=<seconds>	MPLC autostart delay after reboot controller. (Default: 0).
--without-netcore	Disables the report building, C# program execution, and .Net report generating service.
--enable-log	Enables log entry to the default directory <code>/var/log/mplc4</code>. Important! When this option is applied, log entry is automatically enabled.
--enable-log=<path>	Specifies the path to the directory for the log entry. Used to change the default path. Important! When this option is applied, log entry is automatically enabled.

Installation option	Result
--exemplars=N	Number of mplc instances in autostart. Instances are numbered from 0. For example, with N = 10, eleven instances will be created.
--config-only	Updates configurations only, without updating mplc and nginx files. With this option, the installer can be launched without mplc.tar.gz and nginx.tar.gz.
--kill-codesys	Disables CodeSys for RT start.
--netkey	Network key installation.
--disable-dump	When applied, no dump will be generated in case of an mplc crash.
--upload-files	Option for the File load visual component. If the option is not applied during installation, it will be impossible to load files into the runtime. The default file load directory is <i>/tmp/mplc4/</i>
--upload-files= <path>	You can specify the path to the directory where files will be saved when using the File load visual component. If the option is not applied during installation, it will be impossible to load files into the runtime. Used to change the default path.
--nginx-user-dir= <path>	Specifies the directory with nginx user configuration.
--use-systemd	Disables init.d script generation and enables systemd script generation. RT will not be started with the init.d configuration file but will use systemd instead.
--without-monitor	Disables installation of MasterSCADA Monitor services (mplc_daemon and mplc_monitor). When the runtime starts, the main process mplc (Main) is launched directly through mplc_service . For information about runtime processes, see the following section.
--set-password= <pass>	Sets the password that will be used when loading the project. If a password is set, the project can only be loaded into it if the same password is set in the development environment settings on the Miscellaneous tab. As a rule, it is used to protect a public server from users uploading configurations to it.

Installation option	Result
	If the passwords do not match, the project loading will be aborted with an error: Invalid runtime environment password. The encrypted password is saved in the file: <code>/etc/mplc/private_key/secret.txt</code>. If the runtime is managed via MasterSCADA Monitor, this password must be specified when connecting to the host. The password can be changed by: • completely reinstalling the RT; • reinstalling the RT with the <code>--config-only</code> option; • using MasterSCADA Monitor

Apart from extra options, you may need to specify [the required installation options](#) depending on the platform you use.

Runtime installation

In general, for runtime installation, you need to run the `./install.sh` command which will install necessary packages into the system - copy the runtime to the `/opt/mplc4/` folder, update the **nginx** web server configuration, and add **MasterSCADA 4D RT** to autostart.

By running the `cd/opt/mplc4/server` command you will go to the runtime folder;

🔥 **Important!** The path to the installed runtime can be different for some platforms. Wago750 PLC, for example, has the path /home/mplc4.

Below are some examples of installation with options:

Task	Order of commands	Remarks
Install the runtime on Wirenboard 7 PLC.	<pre>cd /tmp sudo su chmod u+x ./install.sh ./install.sh -- http- port=8043</pre>	
Problems occur during runtime so the helpdesk has requested a runtime log and dump.	<pre>cd /tmp sudo su chmod u+x ./install.sh ./install.sh -- enable-log</pre>	
Ten projects are expected to simultaneously run on an x64 device.	<pre>cd /tmp sudo su</pre>	It means that more than one mplc instance will have to be launched.

Task	Order of commands	Remarks
	<pre>chmod u+x ./install.sh ./install.sh -- exemplars=10</pre>	
A PLC is supposed to be used without HMI so as not to overload it (PLC lacks power, is used as a gate only, etc.)	<pre>cd /tmp sudo su chmod u+x ./install.sh ./install.sh -- without-nginx</pre>	

You can check the correctness of the runtime installation by reviewing data in the **log file**: `/var/log/mplc4/mplc_YYYY_MM_DD.txt`, where `YYYY_MM_DD` is the installation date in the appropriate format.

Runtime launch parameters

The following parameters can be used for operations with **mplc** process on Linux OS:

Command	Result
<pre>sudo systemctl start mplc4.service or sudo systemctl start mplc4</pre>	Full startup of the Runtime. If the process is running, a warning will be displayed (no restart occurs)

Command	Result
<code>/start_mplc.sh</code>	Full startup of the Runtime on the Owen PLC 110
<code>sudo systemctl stop mplc4.service</code> или <code>sudo systemctl stop mplc4</code>	Full shutdown of the Runtime
<code>sudo systemctl restart mplc4.service</code> or <code>sudo systemctl restart mplc4</code>	Full restart of the Runtime. Always use this if the Runtime is already running and needs to be restarted
<code>sudo systemctl start mplc4.service local</code> or <code>sudo systemctl start mplc4 local</code>	Startup of the Runtime in debug mode with diagnostic information output to the terminal. If <code>mplc</code> is already running, no restart will occur

Process architecture

The runtime supports two operating modes that determine the composition and hierarchy of launched processes, depending on whether the **--without-monitor** option is used during its installation.

If the runtime is installed without using the **--without-monitor** option, when executing the command `sudo systemctl start mplc4`, processes are launched in the following order:

1. **mplc_daemon** - the main system daemon that manages the environment initialization;
2. **mplc_monitor** - a child process launched by **mplc_daemon**, the server part of **MasterSCADA Monitor**;
3. **mplc** (from version 1.3.6, displayed as **Main** in the process list) - the main executable process that implements the project logic, launched

by **mplc_monitor**;

nginx - web server, launched by **mplc_monitor**.

If the runtime is installed using the **--without-monitor** option, when executing the command `sudo systemctl start mplc4`, processes are launched in the following order:

1. **mplc_service** - a daemon that manages initialization in a simplified mode;
2. **mplc** (from version 1.3.6, displayed as **Main** in the process list) - the main executable process, launched by **mplc_service**.

For more information about logs and process dumps, see **the corresponding section**.

You can check for the presence of runtime processes by executing the commands: `ps -aux | grep mplc` and `ps -aux | grep Main`. The execution results should contain information about the launch of processes related to the runtime.

The above-listed steps will be enough to work with the runtime **demo**.

The **commercial version of MasterSCADA 4D RT** will require [additional steps](#).

You can additionally download **MasterSCADA Monitor** for centralized runtime control.

See also: **mplc launch parameters in Linux**

- [Programs for running on Linux OS](#)
- [Updating the runtime on Linux OS](#)
- [Uninstalling runtime on Linux OS](#)
- **MasterSCADA Monitor**
- **Installing Monitor for Linux**

Programs for running on Linux OS

You may use the following applications:

1. [PuTTY](#) - use as a terminal if your OS has no graphical shell
2. [WinSCP](#) - used to connect to the device's hard disk

To load **MasterSCADA 4D RT** runtime, use the **WinSCP** app.

1. Create a new connection.

WinSCP settings depend on the OS settings but the values below can apply for many PLCs:

Setting	Value
File protocol	SCP
Host name	PLC IP address (PC and PLC must be in the same subnet)
Port number	22
User name	root (the value can be different depending on OS settings)
Password	none

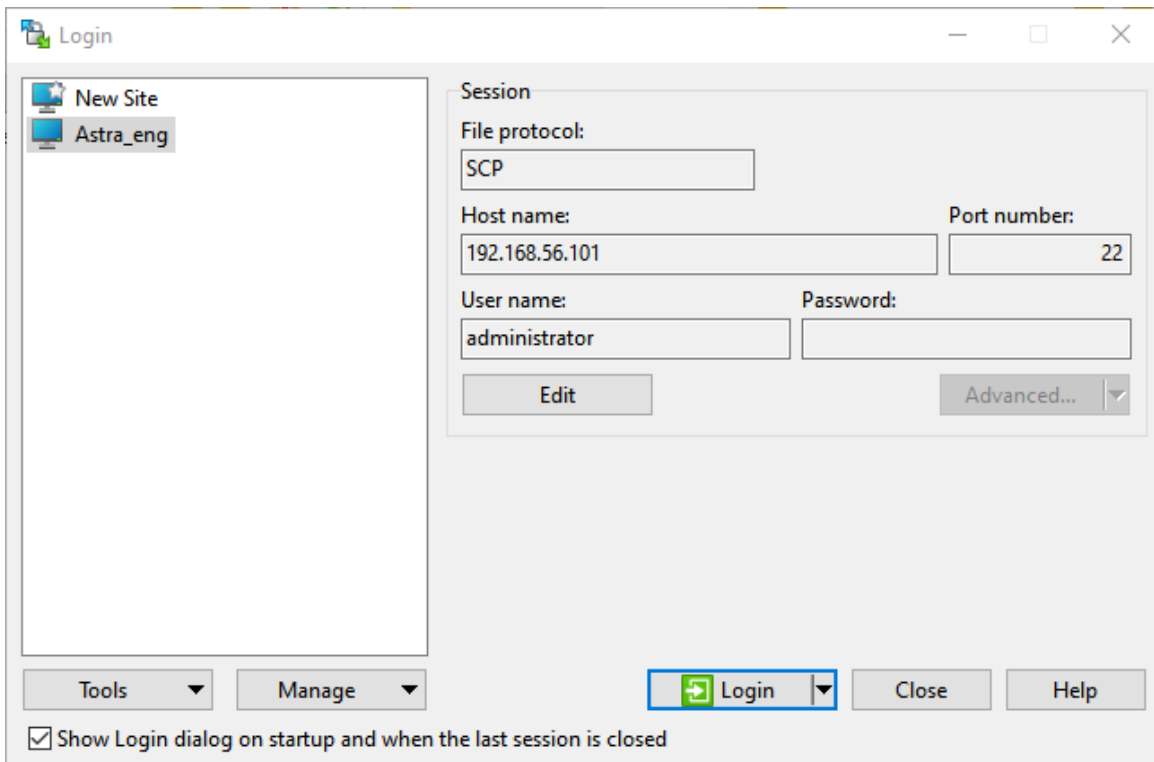


Figure 63

2. Connect a patch cord to the PLC and switch/PC.
3. Power on the device and click **Login**.
4. Enter the password to log in. If the PLC is connected for the first time, click **Yes** in the pop-up window. If an error window appears, click **OK**.
5. Load all files from the installation folder to the `/tmp` folder on the PLC.

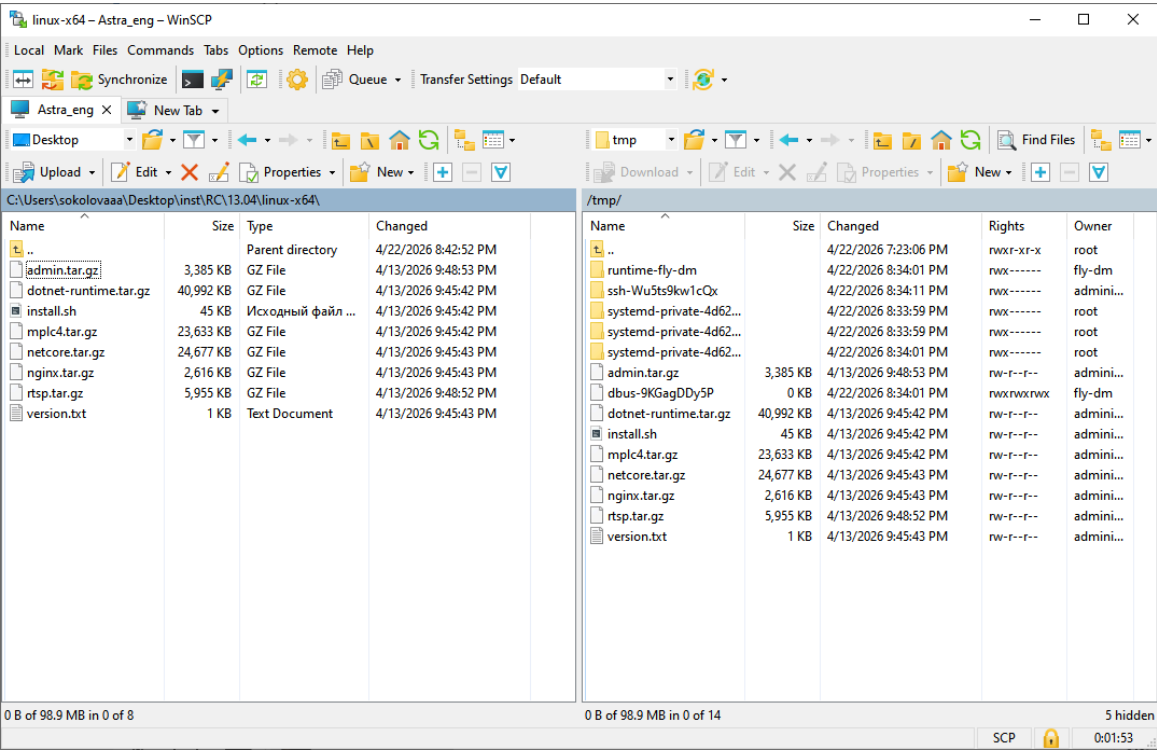


Figure 64

6. Make the following settings in the PuTTY app:

Setting	Value
Connection type	SSH
Host Name (or IP address)	Specify PLC IP address
Port	22

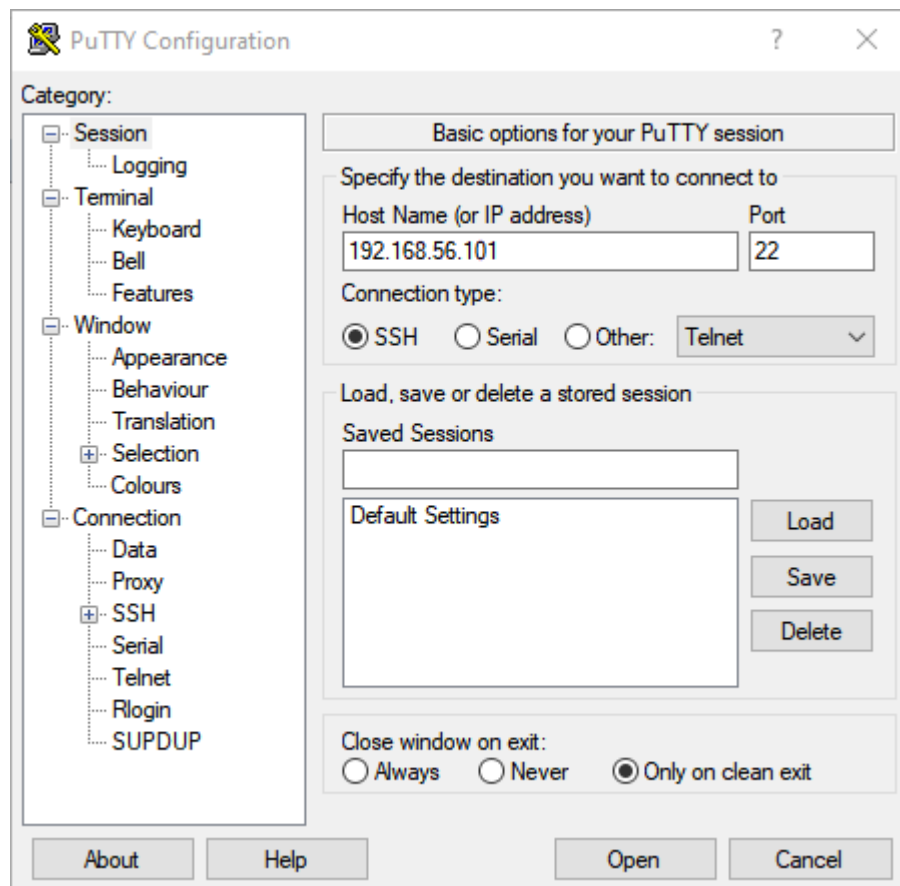


Figure 65

Clicking **Open** will open the terminal window. Enter root as the login and the password which has been set earlier in **WinSCP**.

7. Execute the following installation commands in PuTTY terminal:

```
cd/tmp
chmod 755 ./install.sh
./install.sh
```

You can start the installation with [additional options](#) as appropriate.

The runtime will be launched automatically.

You can connect using **PuTTY to run diagnostics app** and ensure that the installation is correct. Debug events displayed in the terminal mean that the system has been installed correctly.

Platform-specific installation guidelines

Required installation options for various PLCs and operating systems

Platform	Option	Comment
PLC210	<code>./install.sh ---http-port=8043</code>	Port 80 is occupied by another process
WirenBoard7	<code>./install.sh ---http-port=8043</code>	Port 80 is occupied by another process
ONI-PLC-W	<code>./install.sh ---http-port=8043</code>	Port 80 is occupied by another process
Bolid	<code>./install.sh ---http-port=8043</code>	Port 80 is occupied by another process
OptiLogic	<code>./install.sh ---http-port=8043</code>	Port 80 is occupied by another process

Guidelines for installation on ALT Linux

For **ALT Linux 8.1** and later versions, additional steps may be required before installation. For **ALT Linux 8.2**, [standard](#) installation applies. No information is available for installation on earlier OS versions.

Additional steps before installation

With the installer files located in the `/tmp` directory, if you run this command: `./install.sh --i386-dep`, an **Access denied** error may still occur.

To avoid this, the following steps are recommended in addition to the [standard procedure](#) prior to runtime installation:

1. Modify user permissions or place the installer files in the `/opt` directory, which usually has extended write permissions.
2. Open `/etc/apt/sources.list.d/alt.list` and uncomment the first two lines to provide access to the required repositories:

```
altlist X
# ftp.altlinux.org (ALT Linux, Moscow)

# ALT Platform 10
rpm [p10] ftp://ftp.altlinux.org/pub/distributions/ALTLinux p10/branch/x86_64
classic
rpm [p10] ftp://ftp.altlinux.org/pub/distributions/ALTLinux p10/branch/x86_64-
i586 classic
#rpm [p10] ftp://ftp.altlinux.org/pub/distributions/ALTLinux p10/branch/noarch
classic

rpm [p10] http://ftp.altlinux.org/pub/distributions/ALTLinux p10/branch/x86_64
classic
rpm [p10] http://ftp.altlinux.org/pub/distributions/ALTLinux p10/branch/x86_64-
i586 classic
rpm [p10] http://ftp.altlinux.org/pub/distributions/ALTLinux p10/branch/noarch
classic

#rpm [p10] rsync://ftp.altlinux.org/ALTLinux p10/branch/x86_64 classic
#rpm [p10] rsync://ftp.altlinux.org/ALTLinux p10/branch/x86_64-i586 classic
#rpm [p10] rsync://ftp.altlinux.org/ALTLinux p10/branch/noarch classic
```

Figure 66

3. If you are not allowed to edit the file, run the command: **sudo chmod -R 755 /etc/apt/sources.list.d/alt.list**.

Additional installation options

For runtime installation on ALT Linux, you can additionally use the following option: **--disable-dump**. This option disables the memory dump if the **mplc** process crashes.

Post-installation steps

After installation is completed, enable autostart of the **mplc4** service by executing the **systemctl enable mplc4** command to ensure that the system automatically starts at OS boot.

Guidelines for installation on Debian

If Debian has its own web server installed, use port 8043 instead of the default port 80 for installation.

The installation command will then contain the required option:

```
./install.sh --http-port=8043
```

User guidelines for commercial version

Activating your runtime

Use **Activation** for PLCs as a software protection option. Until activated, the **runtime** will operate in **demo mode**.

Therefore, after [installing the runtime](#), go to **IDE** and follow the procedure below:

1. Open **mplc IDE**
2. Add a **node** (PLC, etc.) to the system tree
3. Specify the **IP address**
4. Connect **with configuration loading**
5. Next, run the commands from the dialog box.

USB protection key

The commercial version of **MasterSCADA 4D RT** comes with a **USB key** as a protection option. For details on how to use the key, go to [USB Protection Key](#).

Replacing the key

To replace your key, follow the procedure below:

1. Stop **mplc4**: `systemctl stop mplc4`
2. Go to the **mplc4** directory and delete **mplc.key**
3. Start **mplc**: `systemctl start mplc4`.
4. Connect using the **IDE** and re-activate your device

For more information on protection options available in the **commercial version** of **MasterSCADA 4D**, see [License Protection](#).

See also: **Protection key errors**

- Keys problem checklist
- Fixing the protection key operation
- Specifics of fixing the network key
- Specifics of fixing the key on Linux

Updating the runtime on Linux OS

Automatic update

Runtime update is required if the editor (IDE) version is different from that of the runtime. The system will display the following event: **Your runtime is out of date / has a newer version**. You need to either run an automatic update by clicking **Update runtime system** or [reinstall the runtime](#).

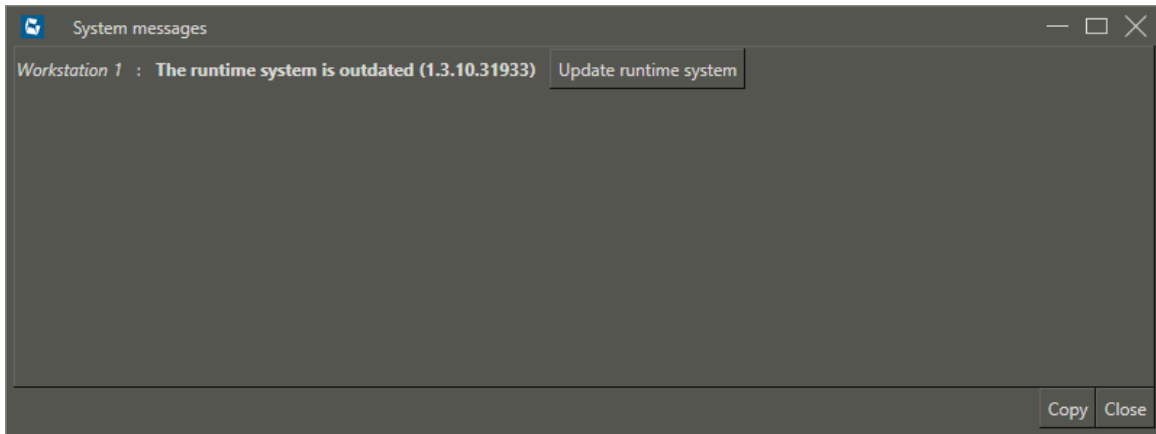


Figure 67

⚡ Important! Automatic updating is only possible if the runtime has the services required for the monitor to operate. These services are available in 1.3.8 and later runtime versions. If an earlier runtime version has been installed or the **** --without-monitor** option has been selected for the installation, the automatic update from the IDE will be inaccessible and the Update Runtime button will not be shown.

Manual update

To reinstall with the old key, save the *key.ini* file from */opt/mplc4*, remove the runtime, and then reinstall.

Uninstalling runtime on Linux OS

To uninstall the runtime, run the script which is supplied with it and copied to a folder on your device upon initial installation: */opt/mplc4/uninstall.sh*.

⚡ Important! The path to the installed runtime can be different for some platforms. For *Wago750 PLC*, for example, it can be found at */home/mplc4*.

You can use PuTTY to run it; for connection parameters, see [Initial installation on Linux OS](#).

Installing on Windows Embedded OS

The runtime will be installed on this OS using a dedicated installer. Its interface is currently under development.

For any installation questions, please contact our [HelpDesk](#) technical support system.

Installing the HMI client

MasterSCADA 4D Client runs on Windows and Linux OS and is installed when you need to connect to the runtime on another PC.

The installation procedures for various operating systems are explained in the respective sections:

[Installing and uninstalling the client on Windows OS](#)

[Installing the HMI client on Linux OS](#)

Installing and uninstalling the client on Windows OS

MasterSCADA 4D Client runs on **Windows 10** and later versions and is installed when you need to connect to a runtime on another PC.

MasterSCADA 4D Client app for **Windows** is suitable for 64-bit OS versions.

Installing the client

To begin installation, run the installation file: *MasterSCADA4DRTClient_x64.exe*. The initial dialog of the installation wizard opens. Select a client language (the default is **Russian**) in the dialog box that appears and click **Next**:

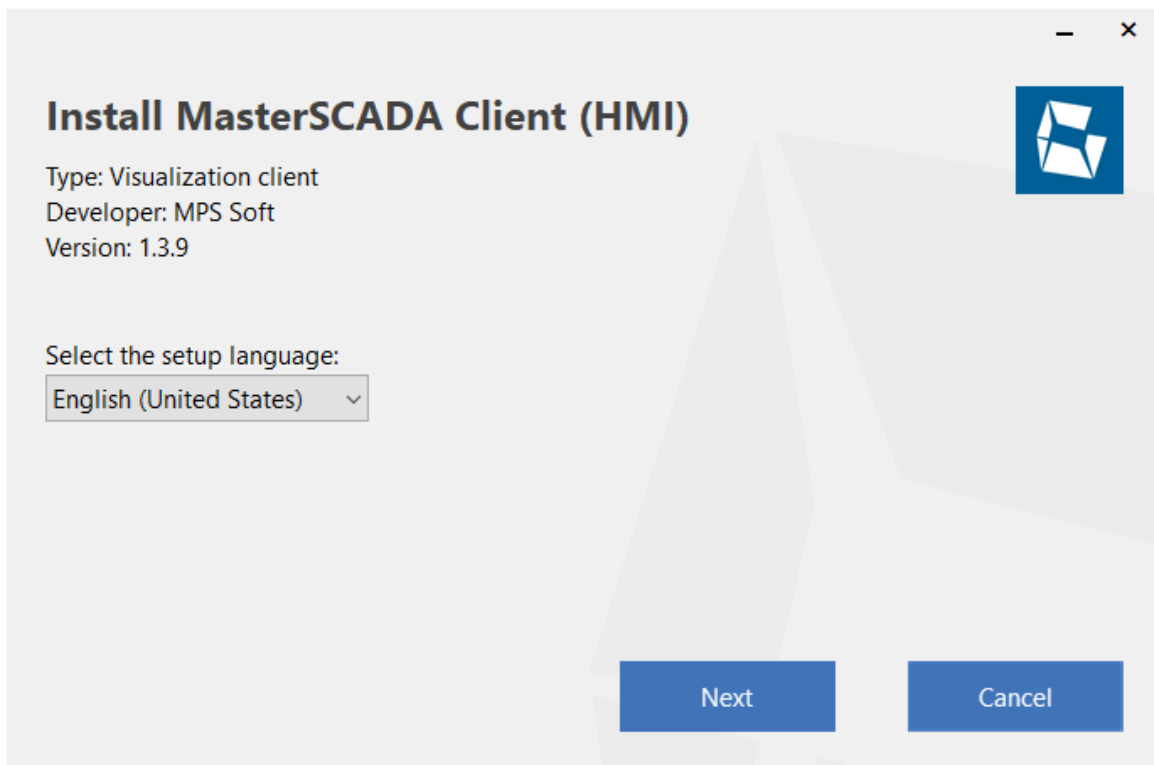


Figure 68

Then, opens a license agreement dialog:

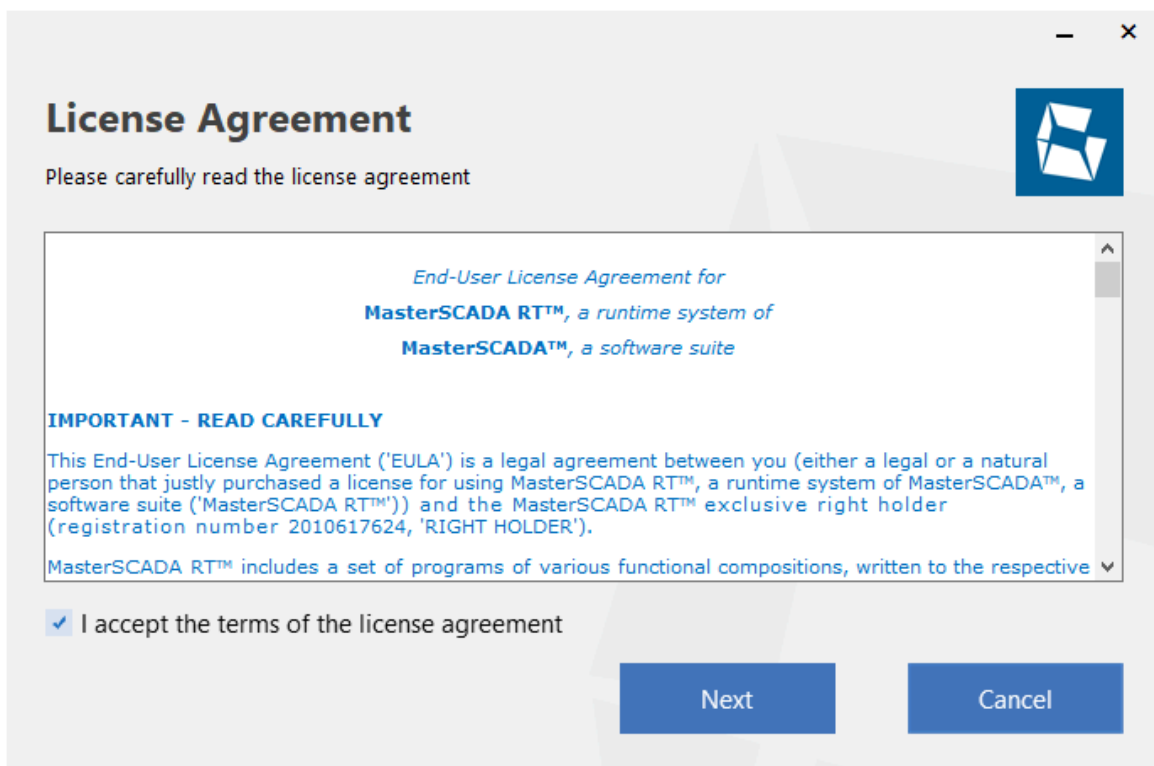


Figure 69 – Then, opens a license agreement dialog

Then, after reading the license agreement, check the acceptance box and click **Next** - the next dialogue window will open:

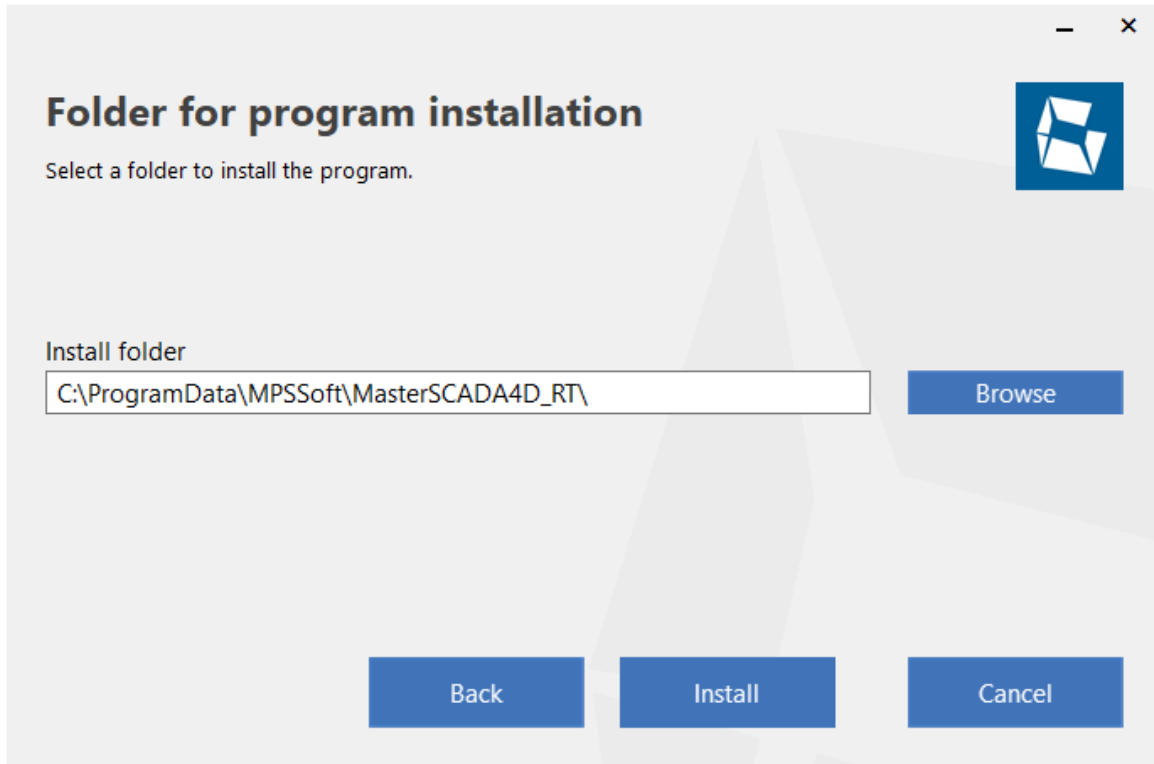


Figure 70

Here, using the **Overview** button, you can change the product destination folder. The default folder is - `C:\ProgramData\MPSSoft\MasterSCADA4D_RT\`.

 **Important!** When selecting the installation path, avoid folders with Cyrillic characters in their names.

Press the **Install** button, and the dialogue window with installation process will open:

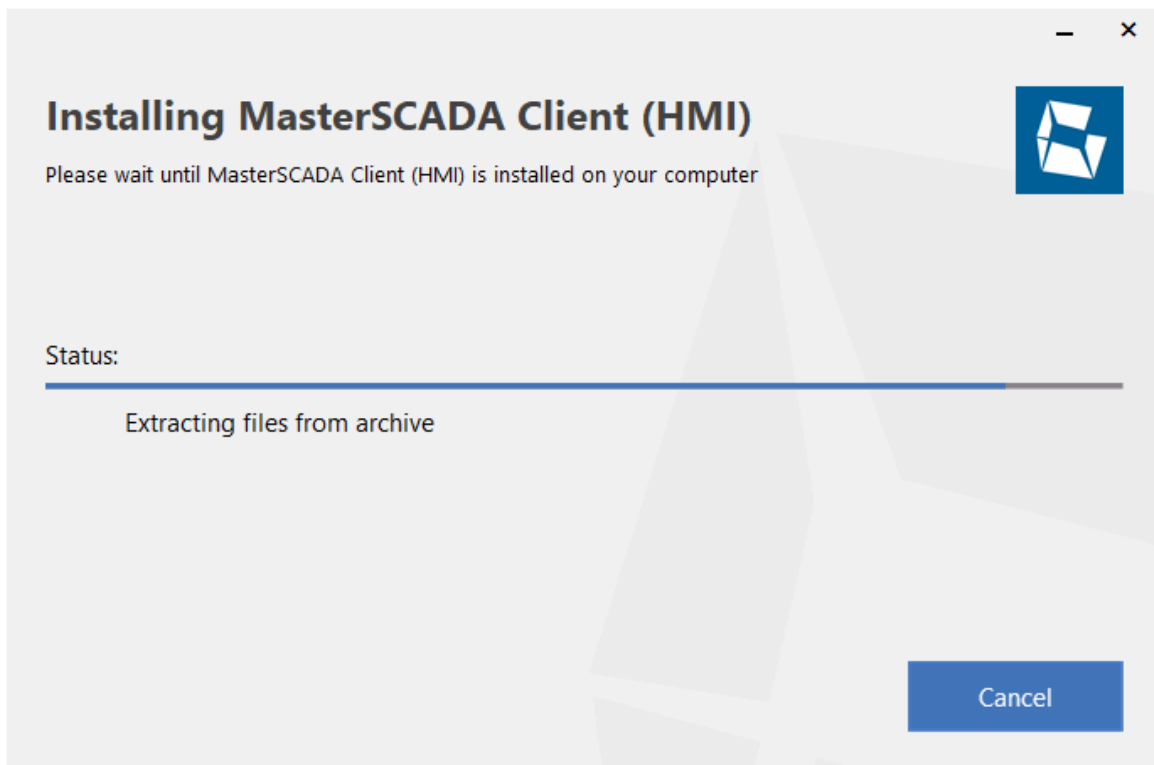


Figure 71 – Press the Install button, and the dialogue window with installation process will open

You may need to allow the program to make changes to your device:

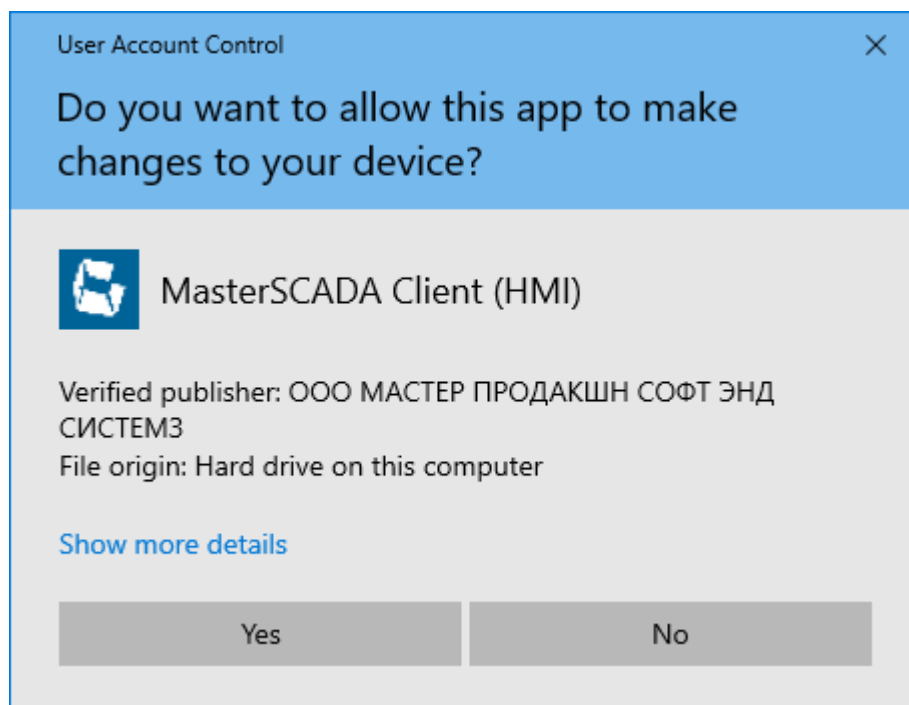


Figure 72 – You may need to allow the program to make changes to your device

Click **Yes** to continue the installation process.

Wait for the installation to complete and the final wizard dialog to appear:

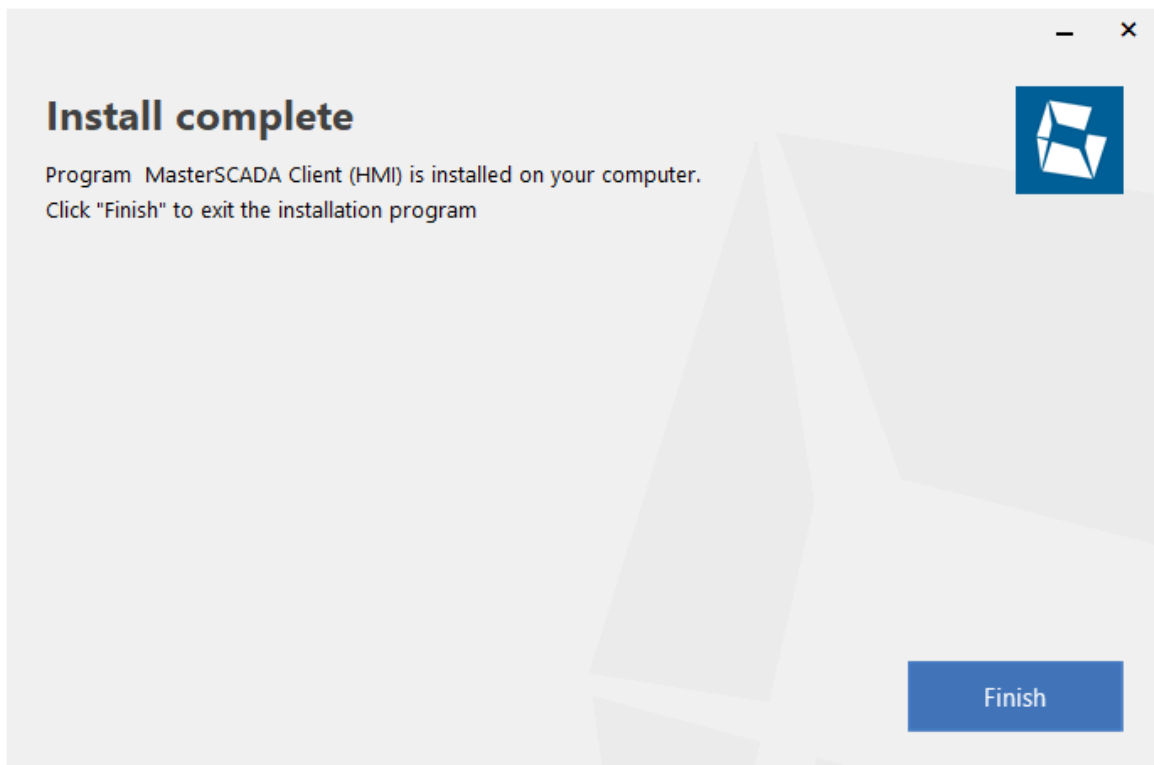


Figure 73 – Wait for the installation to complete and the final wizard dialog to appear

Click **Finish** to complete the wizard.

To work with the client, you must use a special service - **MasterSCADA Launcher**, which is installed along the client.

The client can also be launched directly, without using the launcher. The executable file is located at the following path:

```
C:\ProgramData\MPSSoft\MasterSCADA4D_RT\monitor\bin\client\MS4DRTMonitor.Client.exe
```

Uninstalling the client

Use a special service to work with the client.

To uninstall **MasterSCADA 4D Client**, go to the **Windows** control panel, open **Apps**, select **MasterSCADA 4D Client**, and click **Uninstall**:

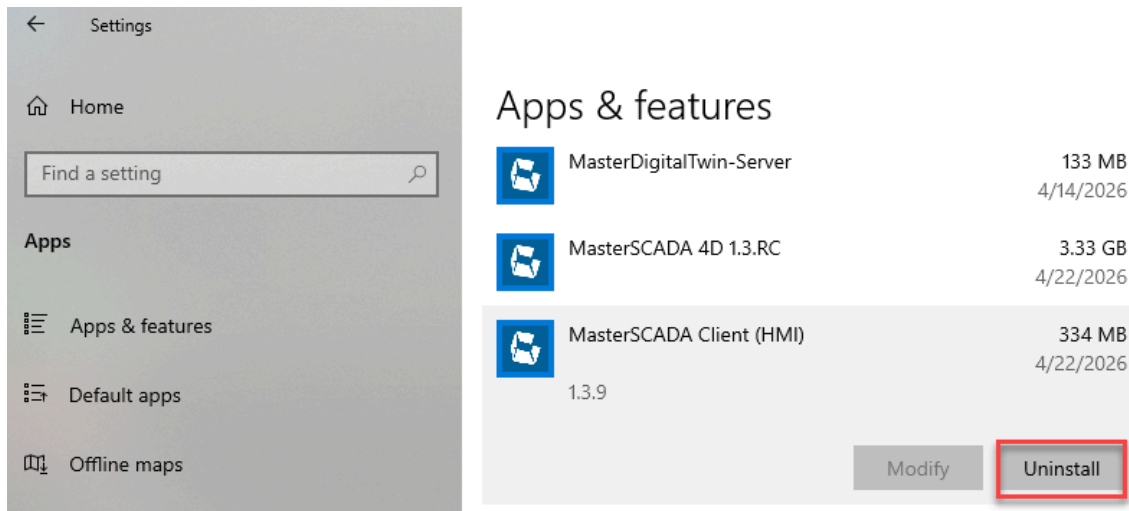


Figure 74

Installing and uninstalling the HMI client on Linux OS

MasterSCADA 4D Client runs on **Linux** OS and should be installed when you need to connect to the runtime on another PC. The device where the client is located has **Linux** OS installed.

There are three installation files for **MasterSCADA 4D Client Linux**:

- *MasterSCADA4DClient-linux-x64.tar.gz* - for 64-bit OS versions;
- *MasterSCADA4DClient-linux-armv7l.tar.gz* - for 32-bit OS versions, local HMI panel build;
- *MasterSCADA4DClient-linux-arm64.tar.gz* - for 64-bit OS versions, local HMI panel build;

Make sure you use a suitable file for your OS.

HMI client files can be downloaded from the technical support **FTP server**. To have access to **the FTP server**, register with [the HelpDesk](#) technical support system.

The HMI client file can be found at:
`/support/Updates/Installation/MasterSCADA_4D/RunTime/linux_x64_client/`.

General installation procedure

1. Place the folder from the archive in the `/tmp` directory.
2. Run the commands below:
 - **su** (or **sudo su**, depending on your OS, to enter the root user mode)

- `cp -rp /tmp/MasterSCADA4DClient-linux-x64/ /opt`
1. Go to the directory `/opt/MasterSCADA4DClient-linux-x64`. Then run the following commands:
 - `chown root:root chrome-sandbox`
 - `chmod 4755 chrome-sandbox`
 - `chmod 755 ./MasterSCADA4DClient`
 4. Close the root user mode by executing the **exit** command.

Starting the HMI client

To start the HMI client, go to the directory `/opt/MasterSCADA4DClient-linux-x64` and execute the command `./MasterSCADA4DClient -u http://127.0.0.1`.

Specify the IP address of the device where the runtime has been installed instead of **127.0.0.1**. If an empty window appears, you will have to additionally type in the port number, e.g. `./MasterSCADA4DClient -u http://10.0.0.32:8043`.

In case of node **redundancy**, add several IP addresses in single quotes (") to the command. For example, `./MasterSCADA4DClient -u 'http://10.0.0.32,http://10.0.0.33'`.

Example of installation on AstraLinux OS

You can use [WinSCP](#) to connect to your device for file transfer

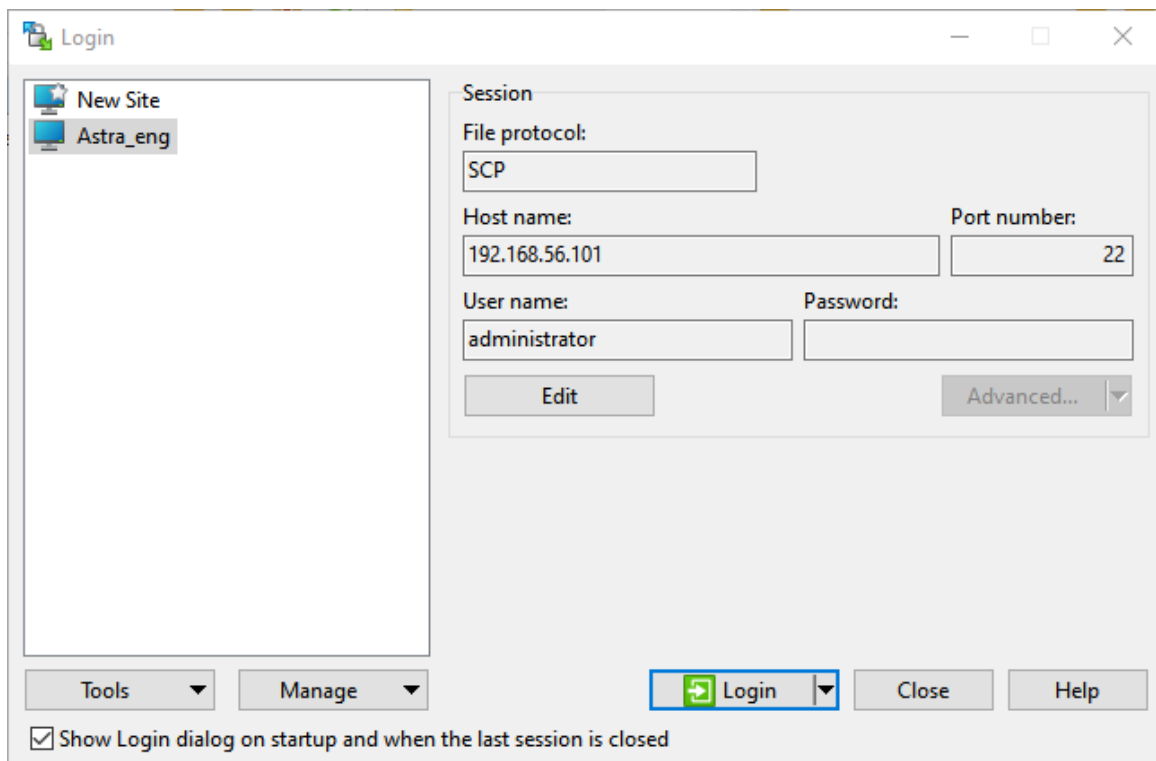


Figure 75

Connection parameters depend on OS settings.

Once connected, select the `/tmp` folder and copy the archive contents to it:

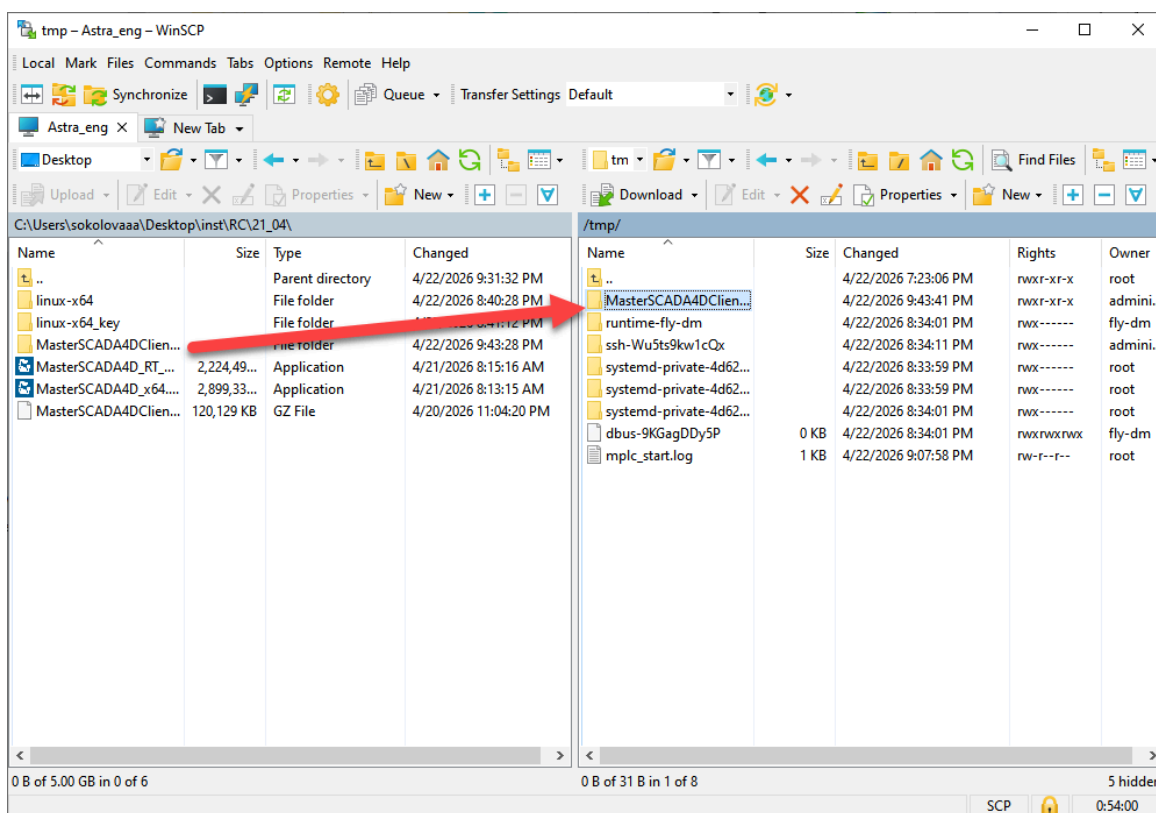


Figure 76

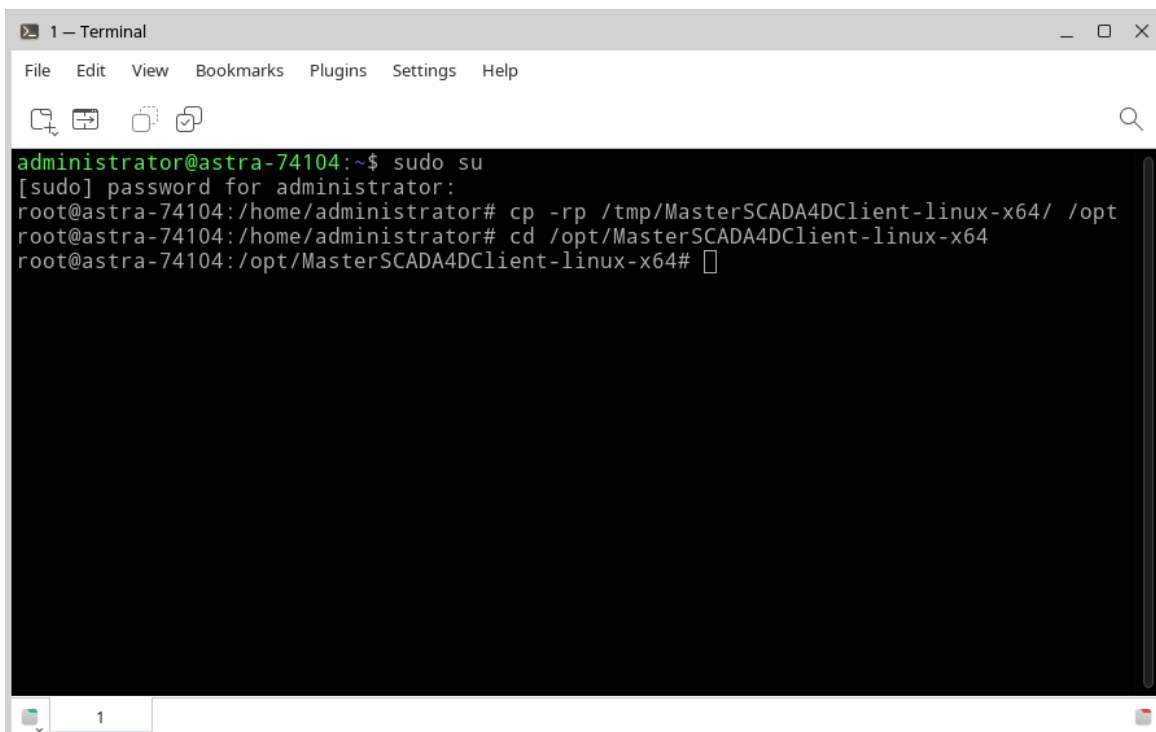
Then open **Terminal** in Linux OS. Execute the following commands one after another:

- **sudo su**
- **cp -rp /tmp/MasterSCADA4DClient-linux-x64/ /opt**

As a result of these commands, the folder will be copied from the temporary folder to `/opt/MasterSCADA4DClient-linux-x64`.

To move to `/opt`, you can use the command: **cd /opt/MasterSCADA4DClient-linux-x64**

If the commands are successful, the **Terminal** appears as follows:



```

1 - Terminal
File Edit View Bookmarks Plugins Settings Help

administrator@astra-74104:~$ sudo su
[sudo] password for administrator:
root@astra-74104:/home/administrator# cp -rp /tmp/MasterSCADA4DClient-linux-x64/ /opt
root@astra-74104:/home/administrator# cd /opt/MasterSCADA4DClient-linux-x64
root@astra-74104:/opt/MasterSCADA4DClient-linux-x64#
  
```

Figure 77 – If the commands are successful, the Terminal appears as follows

Now execute the following commands one by one:

- **chown root:root chrome-sandbox**
- **chmod 4755 chrome-sandbox**
- **chmod 755 ./MasterSCADA4DClient**
- **exit**

Now open the HMI client by running the command **./MasterSCADA4DClient -u <http://127.0.0.1>**

Use this command if the HMI client is installed on the same PC as the runtime. Specify the IP address of the device where the runtime is installed instead of

127.0.0.1. If an empty window appears, you will also need to specify the port number, e.g. `./MasterSCADA4DClient -u http://10.0.0.32:8043`.

View:

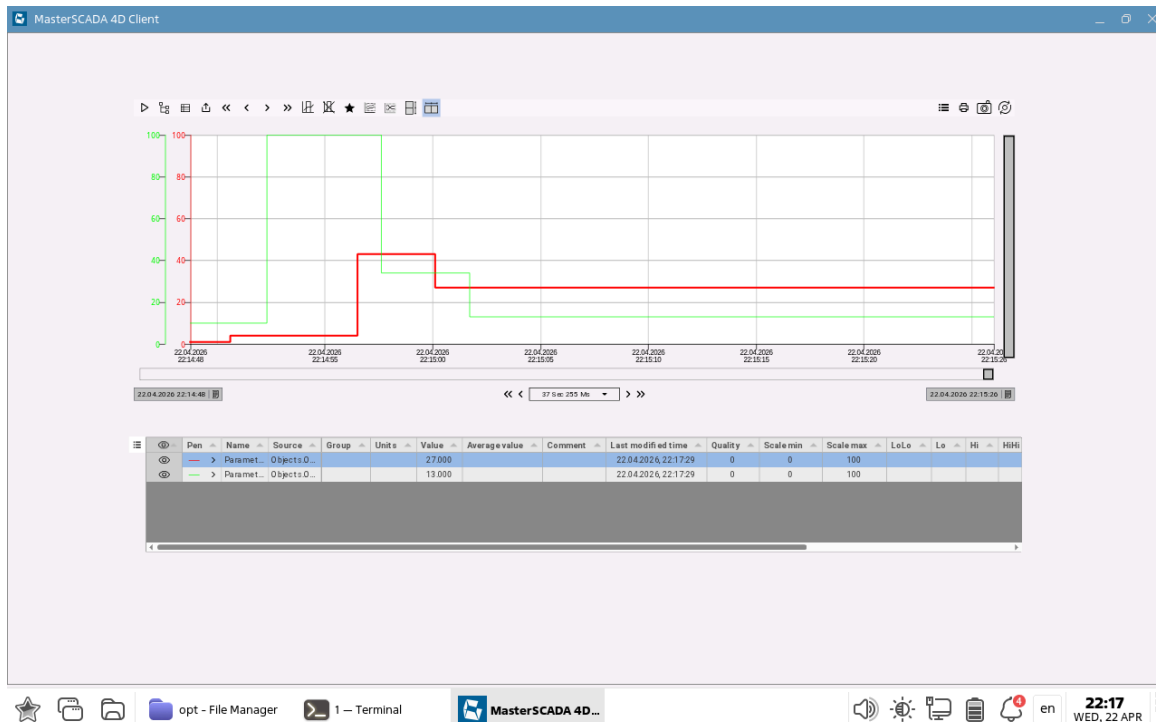


Figure 78

Specific usage guidelines for the HMI client are described in **Working with the HMI client**

Launch parameters of the client

MasterSCADA 4D allows you to change HMI client launch parameters.

Examples of options and their descriptions:

Opt ion	Description
-d	If the option is applied, pressing the F12 key during runtime will open developer tools.
-t "tex t"	Sets a window title. The window title will be the text specified in quotation marks. If the text does not contain any spaces, quotation marks may be omitted.
-- enable-	Enables output of some errors to the console.

Option	Description
log gin g	
-x [nu mb er]	Sets an X-coordinate (in pixels) from 0 (the coordinate of the left edge of the monitor) to Xmax (the coordinate of the right edge of the monitor, as determined by the screen resolution). For example, -x 100 will result in an offset from the left edge of the monitor to the right by 100 pixels.
-y [nu mb er]	Sets a Y-coordinate (in pixels) from 0 (the coordinate of the top edge of the monitor) to Ymax (the coordinate of the bottom edge of the monitor, as determined by the screen resolution). For example, -y 50 will result in an offset from the top edge of the monitor down by 50 pixels.
-w [nu mb er]	Sets a window width (in pixels).
-h [nu mb er]	Sets a window height (in pixels).
If the last four options above are not specified, the window will open in the top left corner with the largest width and height. To switch to fullscreen mode, use the F11 key.	
-f	Enables fullscreen mode. The F11 key does not work in fullscreen mode.
-cp -p	System printer name - sets the default printer .
-s	Storage path - sets a default folder for saving files , e.g. when working with the event log. If the path to the file does not contain spaces, then you may omit quotation marks.
-c	Opens a configuration window allowing you to set a default folder for saving files , and a default printer .
-m [nu mb er]	Specifies the number of monitors on which to open HMI client windows. If fewer monitors are connected to the computer than specified in the settings, then additional HMI client windows will not open. The user authorization window will appear on only one monitor - the one specified first in the operating system. During work, the operator can perform independent actions on each

Option	Description
	monitor (open windows, work with graphs, journals, etc.). For example, -m 2 will launch windows on two monitors.
--noframe	Creates a window without a frame and title. It can be used to create a fullscreen window stretched across several monitors. In this case, you need to specify the following options (example for 2 FullHD monitors): -x 0 -y 0 -w 3840 -h 1080 --noframe
--max-old-space-size = [number]	Defines the maximum memory size (in MB) that the program can use. Usage example: --max-old-space-size=4096 .
--max-heap-size = [number]	Defines a total memory limit (in MB) for all program data. Usage example: --max-heap-size=2048 .
--dha	Disables hardware acceleration. When activated, rendering is performed exclusively by the central processor.

Launching the HMI client at OS start

To ensure that the HMI client is launched during OS start, set up the OS itself. The setting procedure will depend on OS features.

Consider the example for **AstraLinux**.

Select **Parameters** from the control panel:

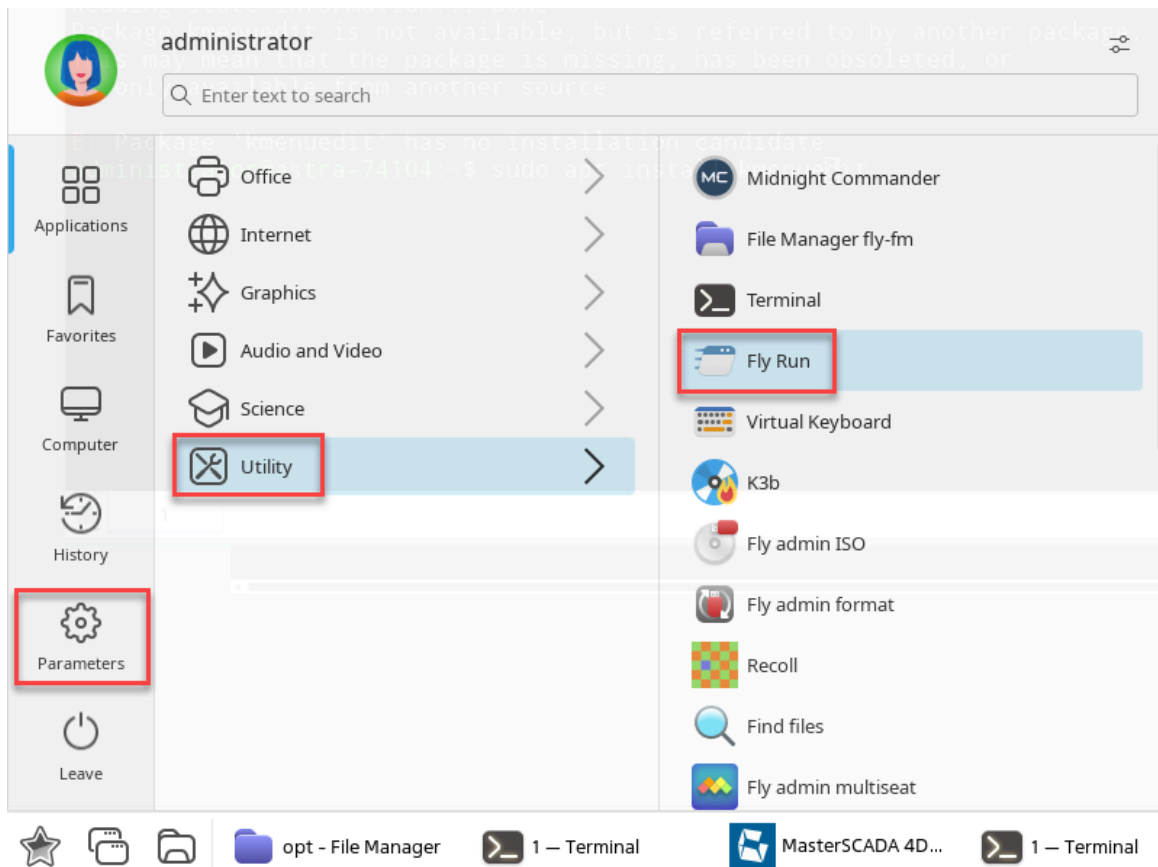


Figure 79 – Select Parameters from the control panel

Select **Fly Run**.

Enter the launch command there. The launch command must include the file path:

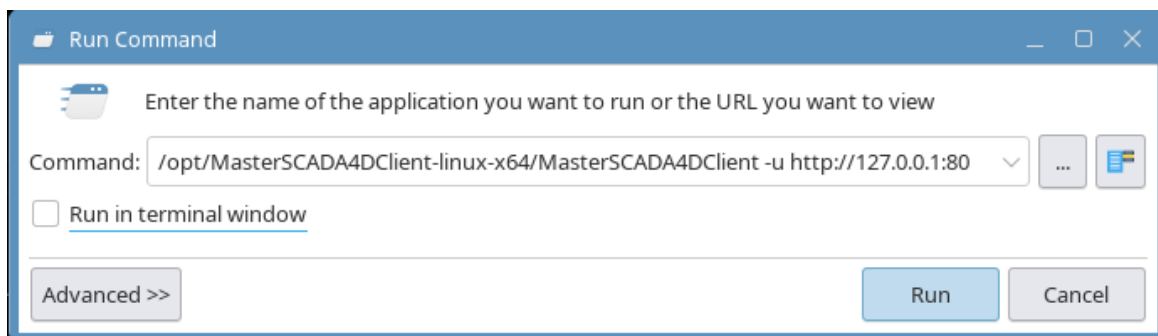


Figure 80 – Enter the launch command there. The launch command must include the file path

Uninstalling the HMI client

To uninstall the client, remove it manually from the `/opt` folder and remove the mention of it in the autostart.

Upgrade procedure

To upgrade to a newer **MasterSCADA 4D** version, you will generally need to perform the following steps:

- 1) [Reinstall the IDE.](#)
- 2) Update the **runtime**.

If the runtime has been installed on Windows, you will simply need to download and reinstall the distribution package as shown in [Updating on Windows OS](#).

If the runtime is installed on Linux OS, both manual and automatic update can be used. For automatic update guidelines, see [Updating runtime on Linux OS](#). For manual update, you will need to [uninstall](#) and [reinstall](#) the runtime.

3) Update the running project in the **runtime**. After updating the **runtime** and **IDE**, open the source project in the editor. When you open the project, the following window will appear:

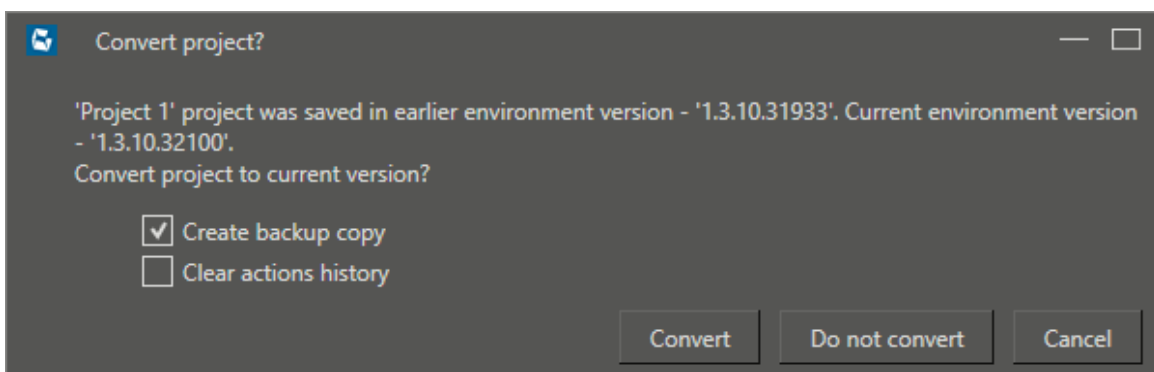


Figure 81

Click the **convert** button and wait until the conversion process is complete.

We recommend that you back up your project and keep previous IDE and runtime distribution packages in order to be able to revert to a previous project version.

4) Recompile the project in the updated editor. Check locally for correct operation without loading the project to the runtime to verify that all system components work properly.

- 5) Load the project to the updated runtime **manually** or **automatically**.

License protection

The IDE and runtime demo with a 1-hour time limit for peripheral equipment scanning and internodal communication are provided free of charge.

The free package also includes **MSRT4D32 Local W** - a runtime intended for 32 external I/O points to be used on a local PC running Windows OS. Any of the compatible **protocols** capable of working in **Master** mode, even though **commercially distributed**, can be connected to the system but note that you can either add no more than one device to the protocol or no more than 32 I/O points depending on the protocol licensing type. The total number of I/O points (channels) will not be greater than 32.

The protection options in the commercial version of **MasterSCADA 4D RT** include activation, software protection key, and USB protection key.

USB protection key is used on servers with Windows or Linux operating system. It will run whether or not internet is available on your PC. Both locally installed and network USB keys can be used. For details, see [Working with USB Keys](#).

Software protection key is used on servers with Windows or Linux operating system. For the key to work, you will need to activate it, which can be done if your PC with the commercial version installed has direct internet access. If the protected PC cannot be connected to the internet, you can use any other PC that is internet-enabled.

In other cases (for some PLCs), you may use **Activation** to protect your software. Until activated, the runtime stays in demo mode. When connecting to the runtime, the editor (IDE) will display a message with an activation code, which you need to send to [HelpDesk](#) technical support. In response, you will receive an activation file. Some PLCs are supplied pre-activated and can get started immediately.

To help you choose a proper runtime version, please feel free to contact us at [HelpDesk](#) technical support.

For details on download, installation, activation, and update procedures, refer to [the User Manual](#).

These sections may also be useful:

Licensing policy

Selecting runtime options

Protection key errors

Prioritizing events

USB protection key

Working with keys

MasterSCADA 4D RT requires using a USB key. We currently use two USB key types that are made by Guardant:

- local (without **NET** marking)



Figure 82

- network (with **NET** marking)



Figure 83

The key type defines the license verification principle and key settings.

Local key

If you have inserted the USB key but it cannot be detected either in the OS Device Manager or at runtime startup, **MasterSCADA 4D** first check the indicator light on the key itself. The light will always be steady green when key operation is

fully correct. In case of incorrect installation, the light will be blinking indicating a **fault**. No light indication at all (the key light is off and is not blinking) means that the key has been damaged and needs to be replaced.

Network key

If you use network keys (with **NET** marking), you will have to install **Guardant License Server**. This application is designed to run on a machine with **Windows OS**. There is also a server version for **Linux OS**, and you can also download a server for another OS from this [link](#).

After installing **Guardant License Server** on your server, open the browser and go to the control panel of the network key server by entering the server address in the address bar (the default address is <http://localhost:3185>, or enter IP address of the remote computer if the network key server is located there).

Next, select **Client's setting** and click **Client's ini-file settings gnclient.ini**.

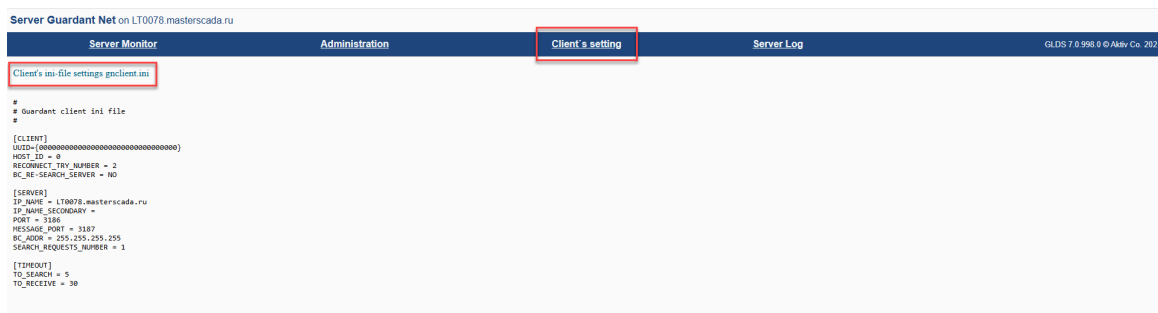


Figure 84

Copy the generated file to `C:\ProgramData\MPSSoft\MasterSCADA4D_RT\rt`. If there is already a **gnclient.ini** file in the folder, replace it with the new one. If you have generated the **gnclient.ini** file and relocated it to the required directory but there is still no connection, open the file in a text editor and find the line as in the screenshot below:

```

1  #
2  # Guardant client ini file
3  #
4
5  [CLIENT]
6  UUID={00000000000000000000000000000000}
7  HOST_ID = 0
8  RECONNECT_TRY_NUMBER = 2
9  BC_RE-SEARCH_SERVER = NO
10
11  [SERVER]
12  IP_NAME = DESKTOP-EN30D22
13  IP_NAME_SECONDARY =
14  PORT = 3186
15  MESSAGE_PORT = 3187
16  BC_ADDR = 255.255.255.255
17  SEARCH_REQUESTS_NUMBER = 1
18
19  [TIMEOUT]
20  TO_SEARCH = 5
21  TO_RECEIVE = 30
22

```

Figure 85

Replace the value in the **IP_NAME** line with the direct IP address of the machine with the network key server. Other parameter settings of the file can be found in the instruction stored on the **FTP server**, in the same partition as drivers.

Manual key search

If the automatic key search has not worked and **MasterSCADA 4D** has not detected the key, you will have to set it manually. Go to the **FTP server** and download **FindKey** app. The application is in the **FindKey** folder from **Updates** directory. Download **Guardant Test.zip**, unpack it, open **Work_with_key** folder, and run **FindKey.exe**.

 **Important! If the application does not start or throws an error message, download and install Visual C++ component. Note that you need the x86 version - vc_redist.x86.exe**

The **Key search** window will then appear. Depending on the key type, select the needed key and program and click **Search**. Use the context menu to create a configuration file.

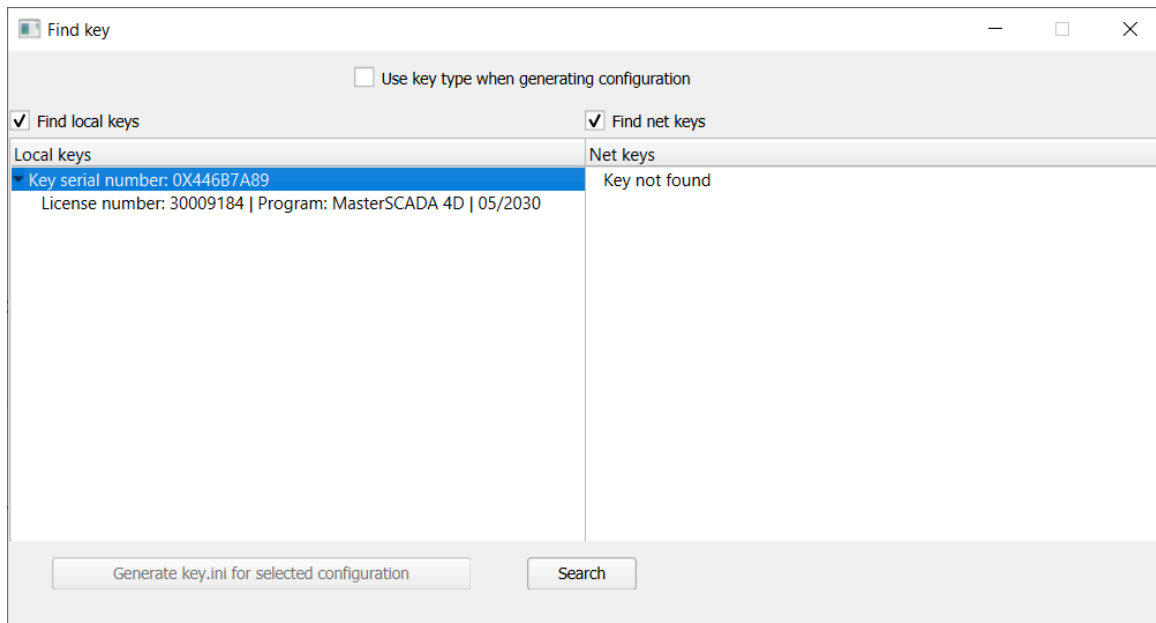


Figure 86

The **key.ini** configuration file is saved to a **ProductName_LicenseNumber** folder. Move **key.ini** to the directory:
[C:\ProgramData\MPSSoft\MasterSCADA4D_RT\rt](C:\ProgramData\MPSSoft\MasterSCADA4D_RT\rt) .

🔥 Important! Such directories are default paths and can be changed by the user if desired.

The key search will then be automatic as long as **key.ini** file stays in the **ProductName_LicenseNumber** folder.

Backup key.ini

In case of a **key.ini** error, the key auto-search from the program folder at [C:\ProgramData\MPSSoft\MasterSCADA4D_RT\rt](C:\ProgramData\MPSSoft\MasterSCADA4D_RT\rt) or from the [instance folder](#) will be terminated.

🔥 We recommend that you create a **key1.ini** backup file in **FindKey** app.

If **key.ini** then throws an error when you use it, proceed to checking the keys in the following order of priority:

1. *DataPath*\key.ini*
2. *DataPath*\key1.ini*

3. *ProgramPath*\key.ini*

4. *ProgramPath*\key1.ini*

If the file has not been found, or has been found but shows an error when the key in it is addressed, move on to check the next key.

***DataPath** - instance folder

***ProgramPath** - program folder.

For more details on using the keys, see the [User Manual](#).

See also: **Protection key errors**

- Keys problem checklist
- Fixing the protection key operation
- Fixing network key errors
- Fixing Linux key errors
- [Using license kits on the same hardware key](#)

Using license kits on the same hardware key

A **hardware (or physical) protection key** should be distinguished from **virtual keys**. A **virtual key** is a license kit. **Virtual keys** are grouped into kits if so requested during the hardware key record stage. Each virtual key is assigned a unique number in *300XXXXX* format. This number can be found in the [FindKey](#) program.

To work with different license kits on the same hardware key, use the **FindKey** program to [generate](#) a [key.ini](#) file for each virtual key.

 **Important! You can have up to 5 license kits written to the same hardware key.**

The location of the **key.ini** file will depend on how many **runtime instances** need to run on one PC:

- If there's one executable RT file on one PC (virtual machine), **key.ini** shall be placed at *ProgramPath*\key.ini*;
- If there are several executable RT file instances on one PC, **key.ini** shall be placed at *DataPath*\key.ini*.

🔗 Important! *DataPath and ProgramPath are abstract names of the full path where the key.ini file will be located. The full path of ProgramPath and DataPath can be found by checking executable RT file logs. The log is stored at:
C:\ProgramData\MPSSoft\MasterSCADA4D_RT\rt\logs\

Here is an example of how **ProgramPath** and **DataPath** can be located in a log file:

```
Log to : log/0/log_2023_12_11.txt
MasterSCADA 4D RT started (1.3.3.16313) Date: Dec 4 2023 20:31:13 ID: Demo
Platform: win64 (8)
(PID=24476) (Dir=C:\ProgramData\MPSSoft\MasterSCADA4D_RT\rt)
ProgramPath=C:\Program Files\MPSSoft\MasterSCADA 4D RT 1.3\
DataPath=C:\ProgramData\MPSSoft\MasterSCADA4D_RT\rt\server
Sizes pointer=8 long=4, int=4, DWORD=4
85062846: Change state from 00 to 03 (1) Date=11.12.2023 Time=10:50:07:837
Unsupported parameter : MasterPLC
Restart config disabled
```

🔗 See also: [USB protection key](#)

- Protection key errors
- Keys problem checklist
- Fixing the protection key operation
- Fixing network key errors
- Fixing Linux key errors
- [Using license kits on the same hardware key](#)

Compatibility with antiviruses and firewalls

MasterSCADA 4D is antivirus and firewall compatible and can even run under a restricted OS user account provided that data receiving and sending ports are enabled, **MasterSCADA 4D** working folders are accessible, and files can be freely added and deleted. It should suffice in most cases to set rights/permissions as described below. In some cases, however, additional permissions may be required.

For the IDE

- Set permissions to read and edit the working folder:
`c:\Users\Public\Documents\MasterSCADA4D\[version number]\\`
 For example: `c:\Users\Public\Documents\MasterSCADA4D1.3\\`
- Set permissions to read and edit the folder which holds projects to be loaded to the runtime: `c:\Users\[user name]\AppData\Roaming\MPSSoft\\`
- Enable the following processes to run: **mplc**, **mplc_service**, **nginx**, **HMI client**.
- To use remote **OPC DA/ HDA** servers, configure **DCOM Windows**.
- Open a desired TCP port to add **OPC UA** tags (depends on settings).

For the runtime

- Set permissions to read and edit the folder from which the runtime starts. The default is:

for Windows: `C:\ProgramData\MPSSoft\MasterSCADA4DRT[version number]\rt\Server.` For example:

`C:\ProgramData\MPSSoft\MasterSCADA4D_RT\rt\\`

for Linux: `/opt/mplc4.`

- Enable a TCP port to interact with the **web server**. The default is **8043** for Windows (or whichever is set in **MasterSCADA 4D Monitor** settings)

and **80** - for Linux.

- To **connect the host** to the runtime (**mplc4** process), port **30501** has to be made available.
- Ensure that TCP port **9615** is accessible as this is necessary for the reports module to work in execution mode.
- To use remote **OPC DA/ HDA** servers, configure **DCOM Windows**.
- Open a desired TCP port to scan for **OPC UA** tags.
- If **MasterSCADA 4D** is used as the **OPC UA** server, enable the incoming TCP port. The default is **16550** (can be changed inside of a project in the node's properties).
- Also, if data transmission is used from **MasterSCADA 4D** to other systems through **Modbus TCP Slave**, enable the incoming TCP port. The default is **502** (can be changed inside of a project in the node's properties).
- To connect the IDE to the runtime, use UDP/TCP port **30550** (depends on the node properties). If there is more than one runtime instance simultaneously running on the same PC, the port number will be **30550 + <mplc instance number>**.
- For internodal link, use UDP/TCP port **30550**. If there is more than one runtime instance simultaneously running on the same PC, the port number will be **30550 + <mplc instance number>**. Current values are transmitted via a TCP port and archive data are transmitted via UDP.
- To synchronize servers for redundancy, use UDP/TCP port **30550**. If there is more than one runtime instance simultaneously running on the same PC, the port number will be **30550 + <mplc instance number>**. Archive data are transmitted via a TCP port; current values and event archives are transmitted via UDP.
- To get a runtime service event log, use TCP port **31550**. If there is more than one runtime instance simultaneously running on the same PC, the port number will be **31550 + <mplc instance number>**.
- For the interaction between the web server and the runtime, use TCP port **30750**. If there is more than one runtime instance simultaneously running on the same PC, the port number will be **30750 + <mplc instance number>**.

For the HMI client

No specific right/permission settings are required in most cases.