Radar Processor/Display

Original Operating Instructions

Communication and Radar Technology

User Guide



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e-mail: services.didactic@festo.com

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Table of Contents

Document Preliminaries **3**

Learning Unit 1 - Overview of the Radar Processor/Display **7**

Introduction to the Radar Processor/Display 7

Reconfigurable Training Module (RTM) and plug-in modules 8

LVRTS software 9

Host computer 9

Learning Unit 2 - Radar Processor/Display Installation and Configuration **11**

Discussion outline 11

Connection types 11

Remote access 13

RTM configuration 14

RTM selection 14

LVRTS Software 15

Procedure 1 – Initial configuration 15

Setup to configure the host computer and the RTM 15

Software installation 16

Configuring the host computer network adapter 16

Configuring the RTM 18

Selecting an RTM 19

Changing the password 19

Resetting the RTM 20

Installing LVRTS Advanced Modes 20

Procedure 2 – Setting up another host computer 20

Setup for connection to a configured RTM 20

Software installation 21

Configuring the host computer network adapter 22

Selecting an RTM 24

Changing the password 25

Procedure 3 – Starting the LVRTS software and changing options 25

Starting the LVRTS software 25

Changing the password 25

Changing the language of the interface 26

Setting the Radar Display refresh time 26

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Document Preliminaries

About this document

Purpose

This User Guide provides an overview of the Radar Processor/Display, an addition to the Basic Radar Training System. It explains how to install the Radar Processor/ Display and LVRTS software and configure the host computer and Reconfigurable Training Module.



Some Windows options mentioned in these instructions may vary slightly between Windows versions.

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For information about the commands and options available in the LVRTS software, refer to the online help. For instructions on using the software to perform laboratory exercises, refer to the Radar courses.

Audience

This User Guide is intended for personnel who install and configure the Radar Processor/Display.

Acknowledgments

We thank the following people for contributing to the development of the Radar Instructional Program: Gilles Y. Delisle, Ph.D., and Michel Lecours, Ph.D., from Laval University; and John Ahern, M.Sc.A., and Marcel Pelletier, Ph.D., from Comlab.

Introduction to the Radar Learning System

If one had to identify the instrument which, by its great versatility, most extends the immense capacities of the human senses, radar would certainly be a serious candidate, if not the most serious. With a radar, one can see in the dark, measure the speed of a moving object precisely, measure the distance of a rain storm or the density of clouds, prevent collisions, obtain advance warning of an impending danger, land in dense fog, determine the relief of mountains, and much more. In a way, radars allow men to do with electromagnetic waves what they would like to be able to do using their senses. It is not surprising, therefore, that radars are used almost everywhere, even though they were invented only during the Second World War. Radars are an extension of our capacity to perceive complex situations, and they are such powerful tools that once one has understood their capabilities, radars can no longer be ignored.

The speed of propagation of electromagnetic waves (the speed of light) allows very little time to perceive a radar echo if the reflecting object is very close. Since this speed is approximately 300 m per microsecond, the radar system must be either quite far from the target or extremely rapid to perceive the effect of a return signal. If the target is far away, however, a great deal of power must be transmitted in order to obtain an echo strong enough to be detected. These are the two points which have always made practical teaching of radar in a laboratory very difficult, and at the same time, very dangerous.

It is in this context that we undertook to develop table-top radar specifically designed for teaching radar principles in a safe way within a laboratory classroom; a project which was said at first to be technically impossible. We have taken into

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consideration not only all the technical details but also the needs of the student in this field, of his or her capacities, of safety standards, and finally, of the versatility required of the apparatus. We put all the energy necessary into this project, and today, the Radar Training System is available and ready to provide the student with a unique learning experience.

We hope that you will have as much pleasure using this system and discovering its potential as we have had conceiving and producing it.

Safety Symbols and Procedures

The following table lists the safety and common symbols that may be used in this document and on the equipment. Before performing procedures with the equipment, you should read all sections regarding safety in the User Guide accompanying the equipment. Additional safety procedures are given before any task requiring specific safety precautions.

Symbol	Description
DANGER	**DANGER** indicates a hazard with a high level of risk, which, if not avoided, will result in death or serious injury.
WARNING	**WARNING** indicates a hazard with a medium level of risk, which, if not avoided, could result in death or serious injury.
CAUTION	**CAUTION** indicates a hazard with a low level of risk, which, if not avoided, could result in minor or moderate injury.
NOTICE	**NOTICE** indicates a hazard with a potentially hazardous situation, which, if not avoided, may result in property damage.
	Caution, risk of danger. Consult the relevant user documentation.
	Caution, risk of electric shock.
	Caution, lifting hazard.
	Caution, hot surface.
	Caution, risk of fire.

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Symbol	Description
	Caution, risk of explosion.
	Caution, belt drive entanglement hazard.
	Caution, chain drive entanglement hazard.
	Caution, gear entanglement hazard.
	Caution, hand crushing hazard.
	Static sensitive contents. Observe precautions for handling electrostatic discharge sensitive devices.
	Notice, non-ionizing radiation.
	Consult the relevant user documentation.
	Radio Equipment Directive (RED) geographical restrictions – consult the relevant user documentation.
	Direct current.
	Alternating current.
	Both direct and alternating current.
	Three-phase alternating current.

Symbol	Description
	Earth (ground) terminal.
	Protective conductor terminal.
	Frame or chassis terminal.
	Equipotentiality.
	On (supply).
	Off (supply).
	Equipment protected throughout by double insulation or reinforced insulation.
	In position of a bi-stable push control.
	Out position of a bi-stable push control.

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Overview of the Radar Processor/Display

Introduction to the Radar Processor/Display

Learning outcomes

After completing this section, you will be able to:

- Explain the principles of operation of the Radar Processor/Display.
- List the different components required for the operation of the Radar Processor/Display.

The Radar Processor/Display, Model 8096-20, is a powerful addition to the Basic Radar Training System, Model 8096-10. It allows students to study the sophisticated analog and digital signal processing and display techniques used in modern radar systems.

The Radar Processor/Display and the Basic Radar Training System are required to perform the exercises in the Radar series manuals, with the exception of the manual Principles of Radar Systems, which requires only the basic system.



The Radar Transmitter, Radar Receiver, Radar Antenna, Radar Synchronizer / Antenna Controller, and Dual-Channel Sampler are included in the Basic Radar Training System. These modules form a coherent radar with quadrature phase detection. The Target Positioning System is also included in the basic system.

The Radar Processor/Display consists of a Reconfigurable Training Module (RTM), a Power Supply, three plug-in modules and an accessory kit. A host computer is also required. The following figure shows how these are interconnected.

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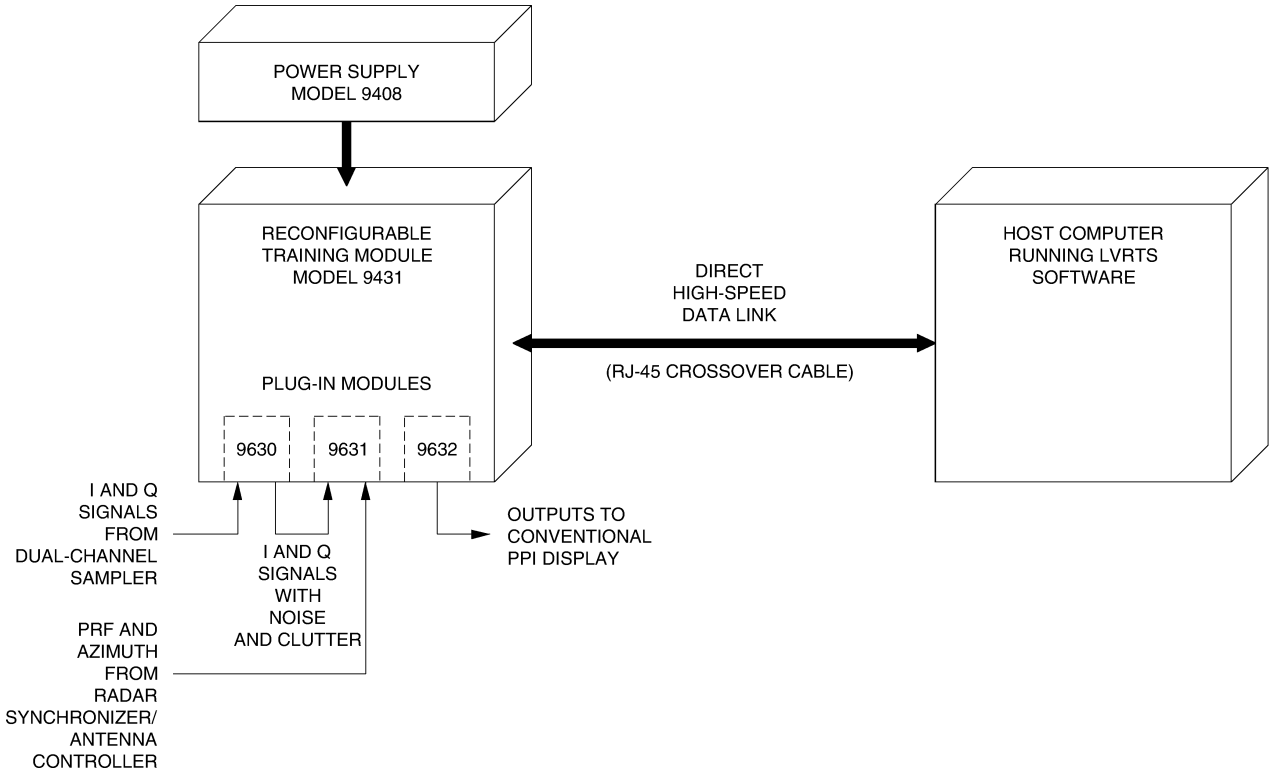


Figure 1: Connections to the Reconfigurable Training Module.

The high-speed data link provides communication between the RTM and the host computer. This data link can be one of the three types shown in the following table.

Table 1: Connection types.

Connection type	Implications	Performance
Direct connection	The host computer must be near the RTM.	No limitations.
Local connection through a local area network (LAN)	The host computer can be anywhere on the same LAN as the RTM.	May be limited by network congestion.
Remote connection through a virtual private network (VPN)	The host computer can be anywhere with high-speed Internet access.	May be limited by Internet bandwidth or network congestion.

Reconfigurable Training Module (RTM) and plug-in modules

The Reconfigurable Training Module (RTM), Model 9431, uses advanced digital signal processor (DSP) technology to perform analog, digital, and display signal processing. Its front-panel slots accommodate the following plug-in modules:

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- The A/D Signal Combiner, Model 9630, generates analog noise and clutter and combines them with the analog I and Q signals before data acquisition.
- The Data Acquisition Interface, Model 9631, samples the analog I and Q signals for processing by the RTM.
- The D/A Output Interface, Model 9632, provides analog outputs for connecting a conventional PPI radar display.

The Power Supply, Model 9408, supplies power to the RTM and plug-in modules.



⚠ CAUTION

The output connectors of the Power Supply, Model 9408, are grounded. Therefore, the connectors on the RTM and plug-in modules are also grounded. To prevent equipment damage, properly ground any external device connected to the RTM or a plug-in module.

LVRTS software

The LVRTS software, included in the accessory kit, provides a user interface for the radar applications. At startup, select an application in the Application Selection dialog box. The software then configures the RTM to perform the required signal and display processing.

The software interface contains several tabs, each displaying a diagram:

- A connection diagram for connecting the modules.
- One or more diagrams of the radar processors. These diagrams include test points (TPs) for observing signals with the Oscilloscope instrument.
- A detailed diagram of the connections to the plug-in modules installed in the RTM.

The System Settings table contains parameters for controlling the system.

The software also includes the following virtual instruments:

- The Oscilloscope displays signal waveforms at the test points (TPs) on the processor tabs.
- The Radar Display shows targets on a PPI display and provides settings for controlling the display.
- The Data Monitor, available only for the digital pulse radar, displays the FFT filter outputs directly in MTD operation mode and provides a table of settings.

Some applications include additional virtual instruments, as described in the corresponding manual.

Host computer

A Windows host computer is required to run the LVRTS software. It must connect to the RTM through a high-speed Ethernet link using the TCP/IP protocol. The computer also needs an Ethernet adapter.

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Radar Processor/Display Installation and Configuration

Discussion outline

Learning outcome

After completing this section, you will be able to:

- Install and configure the Radar Processor/Display.

The discussion of the present unit covers the following points:

- Connection types
- Remote access
- RTM configuration
- RTM selection
- LVRTS Software

Connection types

As explained in the previous unit, a high-speed Ethernet link using the TCP/IP protocol is required to exchange data between the Reconfigurable Training Module and the host computer running the Radar Training System (LVRTS) software.

The host computer must have a network adapter connected to the RTM using one of the following connection types:

1. **Direct Connection**: Connect the host computer directly to the RTM using the provided RJ-45 cable (see the following figure). A second wired or wireless network adapter can connect the computer to a network. Many laptops have both types of adapters built in.

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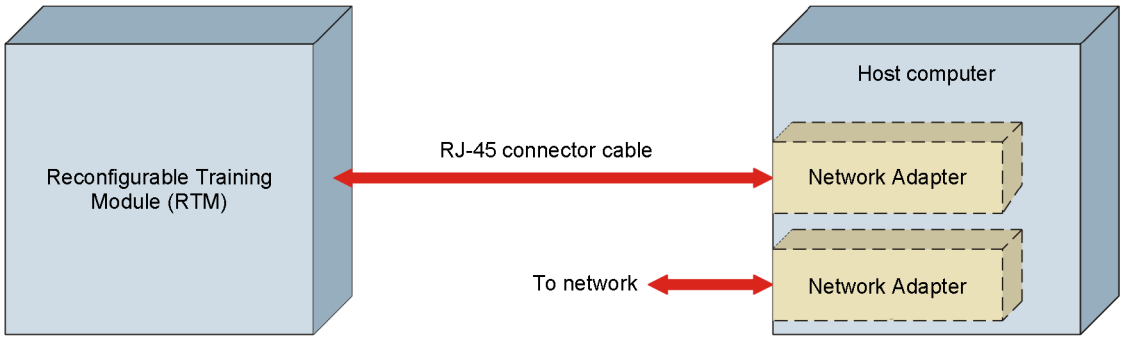


Figure 2: Direct connection between the RTM and the host computer using an RJ-45 cable.

2. **Connection via a Local Area Network (LAN)**: Connect the RTM to the LAN using an RJ-45 cable (see the following figure). Connect the host computer to the same LAN using a wired or wireless connection.

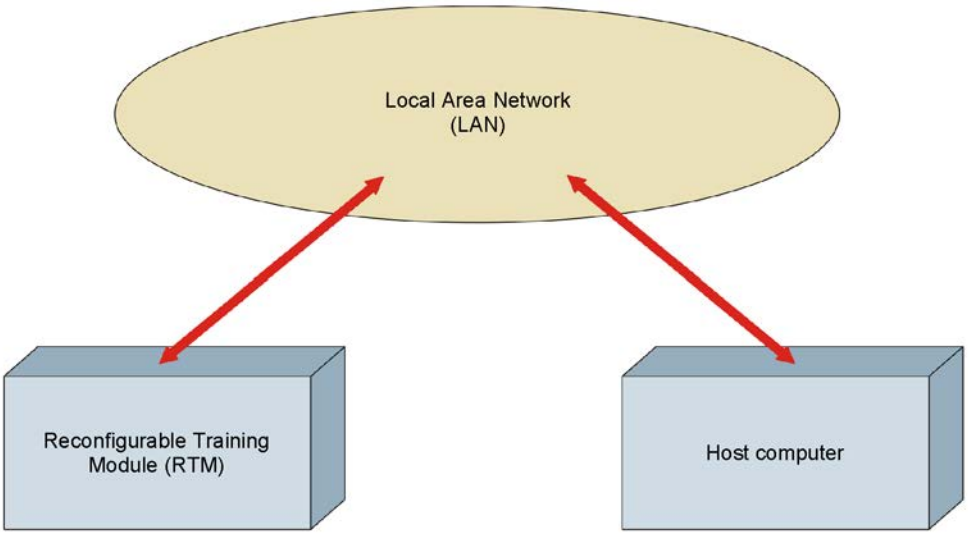


Figure 3: Connection between the RTM and the host computer through a LAN.

3. **Connection via a Virtual Private Network (VPN)**: The host computer and the RTM communicate over the Internet using a technique called tunneling (see the following figure). The VPN extends the LAN, allowing the devices to exchange data as if they were directly connected to the same private local area network.

Tunneling uses a public network, such as the Internet, to transmit data for a private network.

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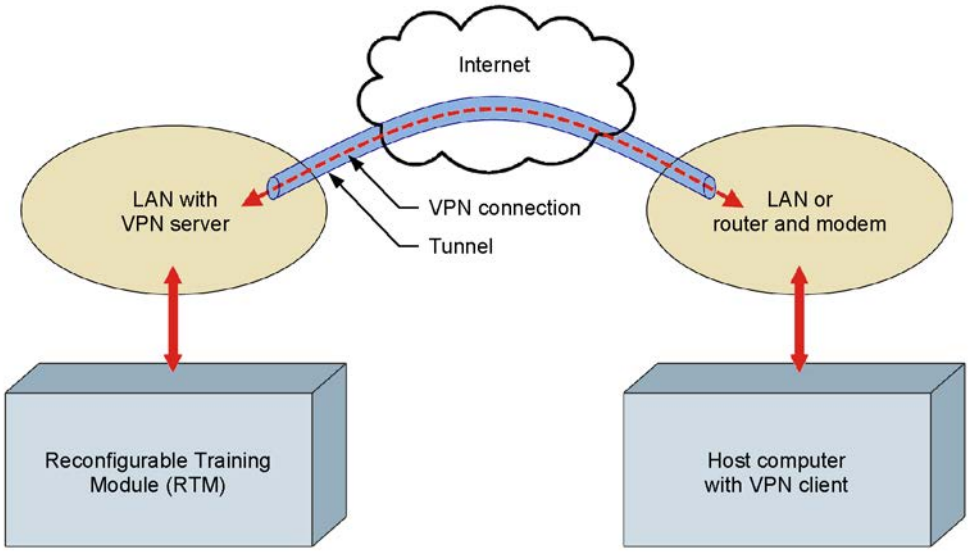


Figure 4: Connection between the RTM and the host computer through a VPN.

A direct Ethernet connection between the RTM and the host computer provides the most reliable data transfer. Other connection types allow multiple computers to access the same RTM and one computer to access different RTMs on the network. However, network congestion may reduce performance.

Network congestion is most likely to affect the Radar Display. If limited network data transfer affects the display, select Options from the Radar Display Tools menu and use the slider to increase the refresh time.

Remote access

With connection types 1 and 2, if the local host computer is connected to a LAN, users anywhere in the world can access it remotely over the Internet or through a VPN. Any suitable remote access application, such as Windows Remote Desktop, can be used. The remote access server runs on the host computer, and a compatible viewer is installed on the user's computer.

With remote access, the student's computer connects to the local host computer, not directly to the RTM. Only mouse, keyboard, and display data are transferred over the Internet, which may provide better performance than a VPN connection. Remote access also allows both an instructor and a student to work on the system simultaneously. The instructor can see the student's screen and activate software faults for troubleshooting exercises.

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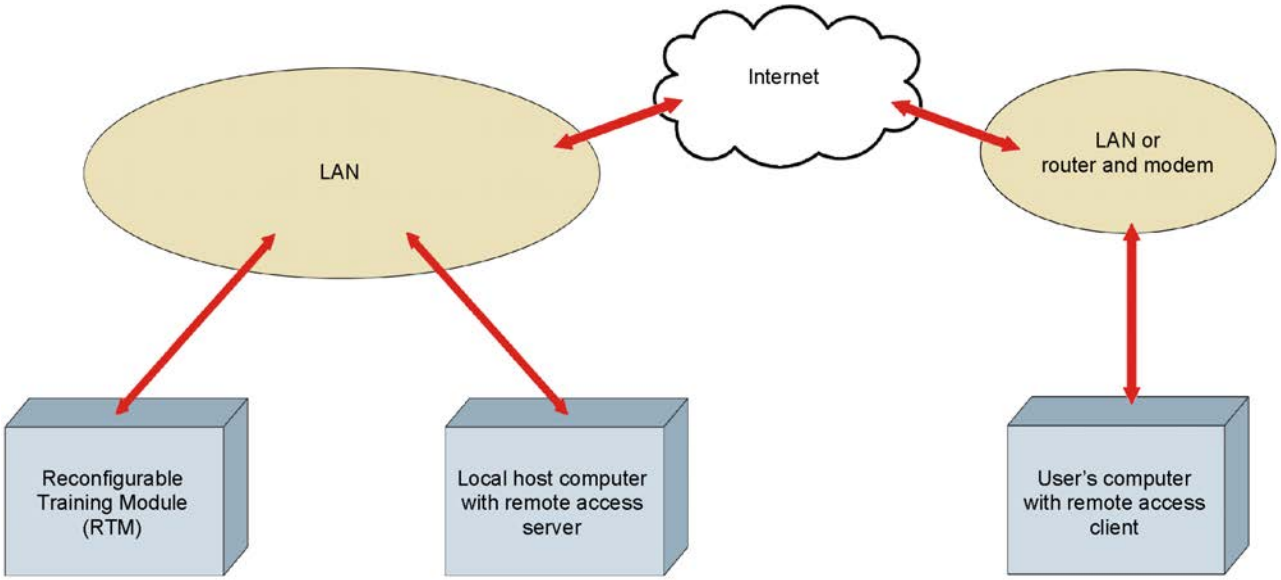


Figure 5: Remote access connection to host computer.

RTM configuration

Regardless of the type of connection between the host computer and the RTM (direct, LAN, or VPN), the RTM IP settings must initially be configured locally using the RTM Administrator utility, which is included with the LVRTS software. This is usually done by the instructor or a technician and is accomplished using a host computer that is temporarily connected to the RTM with a USB cable. Once the RTM has been configured, the USB cable can be removed.

The temporary USB connection is only required for initial configuration of the RTM. It is not used for exchanging data.

A password is required to run the RTM Administrator utility. This prevents unauthorized people (e.g. students) from modifying the RTM Administrator options and from showing the Faults dialog box in the LVRTS software. After installation, the password can be changed within the RTM Administrator.

RTM selection

When more than one RTM is on a LAN, the RTM Administrator must be used to select one of them before the LVRTS software is started.

The RTM Administrator is always installed along with the LVRTS software. This allows each user to select one of the available RTMs. It is not possible, however, for a user to modify the RTM IP address without a temporary USB connection.

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LVRTS Software

The LVRTS software can be downloaded from the following link:

LVRTS

https://bit.ly/LVRTS

If the LVRTS software is already installed and running, you can select Help ▶ Visit Our Home Page in the software.

Procedure 1 – Initial configuration

Setup to configure the host computer and the RTM

Perform this procedure when setting up an RTM and a host computer with LVRTS software for the first time.

In this section, "host computer" refers to a local computer with either a direct connection (Figure 2) or a LAN connection (Figure 3) to the RTM.

A USB cable included with the Radar Processor/Display Accessories temporarily connects the RTM to the host computer to set the RTM IP address.

To set the RTM IP address, the RTM and host computer must be close enough for the USB connection.

After the RTM is configured, disconnect the USB cable. The RTM can then be accessed through its RJ-45 connector by direct connection, LAN, or VPN, provided the required infrastructure is available.

Administrator rights on the host computer are required to perform these steps.

Contact a LAN administrator for more information.

1. The host computer must have a network adapter. If it does not, install the USB network adapter provided in the accessories, if not already installed.

2. Connect the RTM to the RTM Power Supply, then plug in the Power Supply.

3. Using the RJ-45 cable included in the accessories, connect the RTM Ethernet port (RJ-45 connector on the back panel) either directly to the network adapter installed in the host computer (Figure 2) or to the LAN (Figure 3). For a LAN connection, connect the host computer to the same LAN using a wired or wireless connection.

4. Temporarily connect the RTM USB port on the back panel to a USB port on the host computer using the USB cable included in the accessories.

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5. Turn on the RTM Power Supply, then turn on the RTM.

6. Turn on the host computer and log on to Windows using an administrator-level account.

   If you installed a network adapter, Windows detects the new hardware and may require its driver. Refer to the installation procedure supplied with the network adapter to complete the driver installation.

Software installation

7. If LVRTS is not already installed on the host computer, install it as follows:

   - Download LVRTS from the following link:

     LVRTS

     https://bit.ly/LVRTS

   - Extract the file contents, then double-click the setup.exe file.

   - Follow the on-screen instructions.

     You are asked to select a language for the installation dialog boxes. This language also becomes the default for the LVRTS software interface. You can change it later in the software options.

     During installation, several dialog boxes appear so you can install all required components.

     You are prompted to enter an administrator password. The Password field cannot be blank. You can change the password later using the RTM Administrator utility.

     If installation fails, disable all non-essential startup programs, such as antivirus software or screen savers, and try again.

Configuring the host computer network adapter

8. Set the IP address and subnet mask for the network adapter in the host computer. In Windows:

   - Open the Network and Sharing Center and select Change Adapter Settings.
   - Right-click the network connection for the network adapter used to communicate with the RTM, then select Properties.
   - Select Internet Protocol Version 4, then click Properties.

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IP settings (direct connection)

If the network adapter will be used only for a direct connection to the RTM, perform the following step. Otherwise, perform Step 10.

9. If you are using a direct connection to the RTM with a network adapter dedicated to the RTM (as in Figure 2):

    - In the Internet Protocol Version 4 (TCP/IP) Properties dialog box, select the General tab.
    - Select Use the following IP address.
    - Configure the settings as follows:
        - The network adapter and the RTM must have the same subnet mask, for example, 255.255.255.0.
        - For the network adapter and the RTM, the parts of the IP addresses corresponding to "255" in the subnet mask must be identical, and the remaining parts must be different.

    For more information, consult a LAN administrator or someone familiar with computer networking.

    You do not need to configure the other settings on this tab.

10. If you are using a direct connection to the RTM but want to use the same network adapter to connect the host computer to a LAN when it is not connected to the RTM:

    - In the Internet Protocol Version 4 (TCP/IP) Properties dialog box, select the General tab.
        - If the LAN has a DHCP server and DHCP is enabled, select Obtain an IP address automatically.
        - Otherwise, select Use the following IP address, then enter a valid IP address and subnet mask.
    - On the Alternate Configuration tab, select User configured.
    - Configure the settings as follows:
        - The network adapter and the RTM must have the same subnet mask, for example, 255.255.255.0.
        - For the network adapter and the RTM, the parts of the IP addresses corresponding to "255" in the subnet mask must be identical, and the remaining parts must be different.

    You do not need to configure the other settings on this tab.

IP settings (LAN connection)

When the host computer and RTM are connected to a LAN, the host computer's network adapter IP address can be assigned automatically or set manually. If needed, consult the network administrator for the correct settings.

11. Configure the General tab settings to connect to the LAN.

    - In the Internet Protocol Version 4 (TCP/IP) Properties dialog box, select the General tab.
    - Configure the LAN connection settings.
        - If the LAN has a DHCP server and DHCP is enabled, select Obtain an IP address automatically.
        - Otherwise, select Use the following IP address, then enter a valid IP address and subnet mask.

Configuring the RTM

12. On the host computer, start the RTM Administrator utility from the Windows Start menu.

    If the Password Protection dialog box appears, enter the password you defined during software installation.

13. In RTM Administrator, click the RTM IP Address button to display the RTM IP Address Settings.

    Select the Port Type (USB) used to temporarily connect the RTM to the host computer.

14. If you are using a direct connection, select Use the following IP address and configure the settings as follows:

    - The host computer network adapter and RTM must have the same subnet mask, for example, 255.255.255.0.
    - For the network adapter and RTM, the parts of the IP addresses corresponding to "255" in the subnet mask must be identical, and the remaining parts must be different.

    Click View host computer IP settings and select the appropriate network adapter to view the computer settings.

    Click Apply to apply the settings to the RTM. A message should confirm that the new IP address was saved.

When the RTM is connected to a LAN, its IP address can be obtained automatically or set manually.

15. If the RTM is a 9431-2 or -3 model and the LAN has a DHCP server, you can select Automatically obtain an IP address.

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Click Apply. A message should confirm that the new IP address was saved.

16. To set the IP address manually, select Use the following IP address and configure the settings as follows:

    - The host computer network adapter and RTM must have the same subnet mask, for example, 255.255.255.0.
    - For the network adapter and RTM, the IP address parts corresponding to "255" in the subnet mask must be identical, and the remaining parts must be different.

    Click View host computer IP settings and select the appropriate network adapter to view the IP settings.

    Click Apply. A message should confirm that the new IP address was saved.

Selecting an RTM

Regardless of the number of available RTMs, only one RTM can be selected at a time on each host computer. This selection is made in RTM Administrator. When LVRTS starts, the host computer tries to connect to the selected RTM.

17. If it is not already running, start RTM Administrator on the host computer from the Windows Start menu.

    If LVRTS is running, select RTM Administrator from the Tools menu.

    If the Password Protection dialog box appears, enter the password you defined during software installation.

18. To select an RTM, click Default RTM Selection.

    If you know the IP address of the RTM you want to use, enter it manually in the IP Address of Selected Default RTM field.

    If the host computer uses a wireless LAN connection, you must enter the RTM IP address manually. You cannot use the Browse button.

    Use the combo box to select the RTM model to connect to: 9431-1, -2, or -3.

    To search for available RTMs, click Browse. If one or more RTMs are found on the LAN or directly connected to the host computer, they appear under Detected RTMs. Select the desired RTM IP address, then click Select.

Changing the password

19. To change the password, click Change Password. If the Current Password field is enabled, enter the current password. Then enter the new password in the New Password and Confirm Password fields, and click Accept.

Resetting the RTM

20. If you set or changed the RTM IP address, do the following:

    - Reset the RTM for the new IP address to take effect. Turn off the RTM using the front-panel power switch, wait a moment, then turn it back on. On newer RTMs, the RTM IP address appears on the front panel.
    - In RTM Administrator, click Default RTM Selection and select the RTM, or enter its IP address in the IP Address field.
    - Click Apply, then click OK.

21. Click Quit to exit the RTM Administrator.

22. Write down the password and keep it in a safe place.

Installing LVRTS Advanced Modes

LVRTS Advanced Modes unlocks advanced features in the LVRTS software.

The LVRTS Advanced Modes installation package is provided by the sales team when your order is processed.



Before installing LVRTS Advanced Modes, make sure the latest version of LVRTS is installed on the host computer.

Download the latest version of LVRTS from the following link:

LVRTS

https://bit.ly/LVRTS

1. Extract the contents of the installation package using the password provided by the sales team.

2. Open the extracted folder and double-click **setup.exe**.

3. Follow the on-screen instructions to complete the installation.

Procedure 2 – Setting up another host computer

Setup for connection to a configured RTM

Perform this procedure on each additional host computer that will run LVRTS using any connection type: direct, LAN, or VPN.

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In this section, "host computer" refers to a computer that will connect to the RTM by direct connection (Figure 2), LAN connection (Figure 3), or VPN connection (Figure 4).

1. The host computer must have a network adapter. For a direct connection to the RTM (Figure 2), use a wired adapter with an RJ-45 connector. Otherwise, a wireless network adapter can be used if the required infrastructure is available.

2. Turn on the host computer and log on to Windows using an administrator-level account.

   If you installed a network adapter, Windows detects the new hardware and may require its driver. Refer to the installation procedure supplied with the network adapter to complete the driver installation.

Software installation

3. If LVRTS is not already installed on the host computer, install it as follows:

   - Download LVRTS from the following link:

     LVRTS

     https://bit.ly/LVRTS

   - Extract the file contents, then double-click the setup.exe file.

   - Follow the on-screen instructions.

     You are asked to select a language for the installation dialog boxes. This language also becomes the default for the LVRTS software interface. You can change it later in the software options.

     During installation, several dialog boxes appear so you can install all required components.

     You are prompted to enter an administrator password. The Password field cannot be blank. You can change the password later using the RTM Administrator utility.

     If installation fails, disable all non-essential startup programs, such as antivirus software or screen savers, and try again.

Configuring the host computer network adapter

4. Set the IP address and subnet mask for the network adapter in the host computer. In Windows:

    - Open the Network and Sharing Center and select Change Adapter Settings.
    - Right-click the network connection for the network adapter used to communicate with the RTM, then select Properties.
    - Select Internet Protocol Version 4, then click Properties.

IP settings (direct connection)

If the network adapter will be used only for direct connection to the RTM, perform the following step. Otherwise, perform Step 6.

5. If you are using a direct connection to the RTM with a network adapter dedicated to the RTM (as in Figure 2):

    - In the Internet Protocol Version 4 (TCP/IP) Properties dialog box, select the General tab.
    - Select Use the following IP address.
    - Configure the settings as follows:

        - The network adapter and RTM must have the same subnet mask, for example, 255.255.255.0.
        - For the network adapter and RTM, the parts of the IP addresses corresponding to "255" in the subnet mask must be identical, and the remaining parts must be different.

        For more information, consult a LAN administrator or someone familiar with computer networking.

        You do not need to configure the other settings on this tab.

6. If you are using a direct connection to the RTM but want to use the same network adapter to connect the host computer to a LAN when it is not connected to the RTM:

    - In the Internet Protocol Version 4 (TCP/IP) Properties dialog box, select the General tab.

        - If the LAN has a DHCP server and DHCP is enabled, select Obtain an IP address automatically.
        - Otherwise, select Use the following IP address, then enter a valid IP address and subnet mask.

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- On the Alternate Configuration tab, select User configured.
- Configure the settings as follows:
    - The network adapter and RTM must have the same subnet mask, for example, 255.255.255.0.
    - For the network adapter and RTM, the parts of the IP addresses corresponding to "255" in the subnet mask must be identical, and the remaining parts must be different.



You do not need to configure the other settings on this tab.

IP settings (LAN connection)

When the host computer and RTM are connected to a LAN, the host computer's network adapter IP address can be obtained automatically or set manually. If needed, consult the network administrator for the appropriate settings.

7. Configure the General tab settings to connect to the LAN.
    - In the Internet Protocol Version 4 (TCP/IP) Properties dialog box, select the General tab.
    - Configure the LAN connection settings.
        - If the LAN has a DHCP server and DHCP is enabled, select Obtain an IP address automatically.
        - Otherwise, select Use the following IP address, then enter a valid IP address and subnet mask.

IP settings (VPN connection)

To connect a remote host computer to the RTM through a VPN, the RTM at the institution must be connected to a LAN or router that has a VPN server. At the remote location, the user's host computer must be connected to a LAN or router that supports the protocol used by the VPN.

The institution should provide instructions to each remote user for configuring the user's computer.

8. The user's computer is probably already configured to connect to the LAN or router. If not, perform the following steps on the user's computer:
    - Open the Network and Sharing Center and select Change Adapter Settings.
    - Right-click the network connection used to communicate with the RTM, then select Properties.
    - Select Internet Protocol Version 4 (TCP/IPv4), then click Properties.
    - In the Internet Protocol Version 4 (TCP/IPv4) Properties dialog box, select the General tab.

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- Configure the LAN or router connection settings.
    - If the LAN or router has a DHCP server and DHCP is enabled, select Obtain an IP address automatically.
    - Otherwise, select Use the following IP address, then enter a valid IP address and subnet mask.

9. If the institution supplies a VPN client application to remote users, follow the instructions provided by the institution.

   Otherwise, to use the VPN connection feature built into Windows, perform the following steps:

   - Press the Windows key on the keyboard and type "VPN" without quotation marks.
   - Select Change virtual private networks (VPN).
   - Click Add a VPN connection.
   - Under VPN provider, select Windows (built-in).
   - Enter a Connection name that identifies this VPN connection.
   - Complete the other fields as directed by the institution you want to connect to, then click Save.
   - After you set up the VPN, click the network icon in the taskbar. The connection name appears in the pop-up menu.



   - To connect through the VPN, select this VPN connection.
   - If the Connect button appears under the VPN connection, click it. If the Settings window opens, select the VPN and click Connect.
   - To disconnect, select the VPN connection and click Disconnect.



   To delete a VPN connection, click Remove in the Settings window.

Selecting an RTM

Regardless of the number of available RTMs, only one RTM can be selected at a time on each host computer. This selection is made in RTM Administrator. When LVRTS starts, the host computer tries to connect to the selected RTM.

10. If it is not already running, start RTM Administrator on the host computer from the Windows Start menu.

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If LVRTS is running, select RTM Administrator from the Tools menu.

If the Password Protection dialog box appears, enter the password you defined during software installation.

11. To select an RTM, click Default RTM Selection.

    If you know the IP address of the RTM you want to use, enter it manually in the IP Address of Selected Default RTM field.



If the host computer uses a wireless LAN connection, you must enter the RTM IP address manually. You cannot use the Browse button.

Use the combo box to select the RTM model to connect to.

To search for available RTMs, click Browse. If one or more RTMs are found on the LAN or directly connected to the host computer, they appear under Detected RTMs. Select the desired RTM IP address, then click Select.

Changing the password

12. To change the password, click Change Password. If the Current Password field is enabled, enter the current password. Then enter the new password in the New Password and Confirm Password fields, and click Accept.

Procedure 3 – Starting the LVRTS software and changing options

Starting the LVRTS software

This procedure explains how to start LVRTS and change selected options.

Start LVRTS from the Windows Start menu.

Changing the password

Change the password at any time using RTM Administrator as follows:

1. Start RTM Administrator using one of the following methods:
    - If LVRTS is running, select RTM Administrator from the Tools menu.
    - Start RTM Administrator from the Windows Start menu.

2. If the Password Protection dialog box appears, enter the current password.

3. In RTM Administrator, click Change Password. If the Current Password field is enabled, enter the current password. Enter the new password in the New Password and Confirm Password fields, then click Accept.

Changing the language of the interface

Several languages are available for the LVRTS user interface. The default language is set during installation. To change the interface language for the current session:

1. In LVRTS, select Options from the Tools menu.

2. Select the desired language from the Language drop-down list, then click OK.

Setting the Radar Display refresh time

The refresh time determines how quickly the Radar Display is refreshed. If the network is congested, or if the video adapter in the host computer cannot refresh the display quickly enough, a data transfer backlog may occur and degrade display performance. To correct this problem:

1. In the Tools menu of the Radar Display, select Options.

2. In the Options dialog box, move the Refresh time slider toward Slowest, then click OK. When the refresh time is sufficiently slowed, the display should operate correctly. If it is slowed too much, however, the triangle indicating the antenna position jumps from point to point instead of moving smoothly around the display circumference.

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FESTO

CE Importer:
Festo Didactic SE
Rechbergstr. 3
73770 Denkendorf
Germany
Tel.: +49 711 3467-0
did@festo.com

US Importer:
Festo Didactic Inc.
607 Industrial Way West
Eatontown, NJ 07724
United States
Tel.: +1 732 938-2000
Toll Free: +1-800-522-8658
services.didactic@festo.com

CA Manufacturer:
Festo Didactic Ltée/Ltd
675, rue du Carbone
Québec (Québec) G2N 2K7
Canada
Tel.: +1 418 849-1000
Toll Free: +1-800-522-8658
services.didactic@festo.com

UK Importer:
Festo Ltd
Applied Automation Centre
Brackmills
Northampton, NN4 7PY
United Kingdom
T +44 800 626 422
info_gb@festo.com

www.festo.com

User Guide

Radar Processor/Display

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