SIEMENS

Reyrolle 7SR46
Operating

V1.02

Manual

NOTE

For your own safety, observe the warnings and safety instructions contained in this document, if available.

Disclaimer of Liability

Subject to changes and errors. The information given in this document only contains general descriptions and/or performance features which may not always specifically reflect those described, or which may undergo modification in the course of further development of the products. The requested performance features are binding only when they are expressly agreed upon in the concluded contract.

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Version of the product described: V1.02

Preface

Purpose of the Manual

This manual describes the operation of the device and gives information about safety, commissioning, and operation as well as checks and tests.

Target Audience

This manual is mainly intended for protection system engineers, commissioning engineers, persons entrusted with the setting, testing and maintenance of automation, selective protection and control equipment, and operational crew in electrical installations and power plants.

Scope

This manual applies to the Reyrolle device family.

Further Documentation
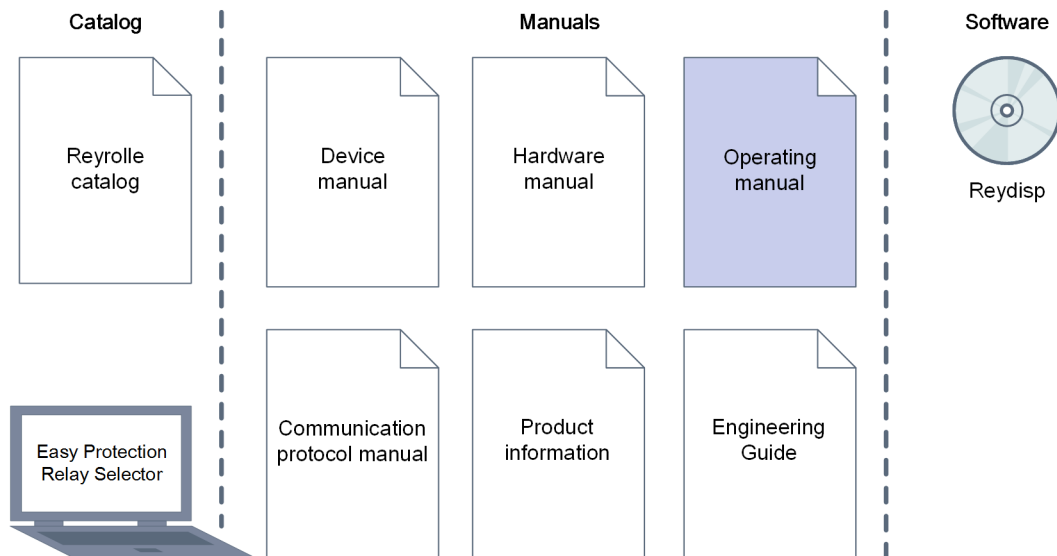
[dw_reyrolle-catalog_furtherdocumentation_operatingmanual, 1, en_US]

- Device manual
  The device manual describes the functions and applications of a Reyrolle device. The printed manual for the device has the same informational structure.

- Hardware manual
  The hardware manual describes the hardware building blocks and device combinations of the Reyrolle device family.

- Operating manual
  The operating manual describes the basic principles and procedures for operating and installing the devices of the Reyrolle device family.

- Communication protocol manual

  The communication protocol manual contains a description of the protocols for communication within the Reyrolle device family and to higher-level network control centers.

- Product information

  The product information includes general information about device installation, technical data, limiting values for input and output modules, and conditions when preparing for operation. This document is provided with each Reyrolle device.

- Engineering Guide

  The engineering guide describes the essential steps when engineering with Reydisp. In addition, the engineering guide shows you how to load a planned configuration to a Reyrolle device and update the functionality of the Reyrolle device.

- Reyrolle catalog

  The Reyrolle catalog describes the Reyrolle Reyrolle devices and the system features.

- Easy Protection Relay Selector for Reyrolle and SIPROTEC

  This tool gives a quick guidance to find a protection relay of SIPROTEC 5, SIPROTEC 4, SIPROTEC Compact, Reyrolle which would fit your needs.

Additional Support

For questions about the system, contact your Siemens sales partner.

Customer Support Center

Our Customer Support Center provides a 24-hour service.

Siemens AG	
Smart Infrastructure – Protection Automation	Tel.: +49 911 2155 4466
Customer Support Center	E-Mail: *energy.automation@siemens.com*

Training Courses

Inquiries regarding individual training courses should be addressed to our Training Center:

Siemens AG	
Siemens Power Academy TD	Phone: +49 911 9582 7100
Humboldtstraße 59	E-mail: *poweracademy@siemens.com*
90459 Nuremberg	Internet: *www.siemens.com/poweracademy*
Germany	

Notes on Safety

This document is not a complete index of all safety measures required for operation of the equipment (module or device). However, it comprises important information that must be followed for personal safety, as well as to avoid material damage. Information is highlighted and illustrated as follows according to the degree of danger:

⚠ DANGER

DANGER means that death or severe injury **will** result if the measures specified are not taken.

- ✧ Comply with all instructions, in order to avoid death or severe injuries.

⚠ **WARNING**

WARNING means that death or severe injury **may** result if the measures specified are not taken.

✧   Comply with all instructions, in order to avoid death or severe injuries.

⚠ **CAUTION**

CAUTION means that medium-severe or slight injuries **can** occur if the specified measures are not taken.

✧   Comply with all instructions, in order to avoid moderate or minor injuries.

NOTICE

NOTICE means that property damage **can** result if the measures specified are not taken.

✧   Comply with all instructions, in order to avoid property damage.

ⓘ **NOTE**

Important information about the product, product handling or a certain section of the documentation which must be given attention.

OpenSSL

This product includes software developed by the OpenSSL Project for use in OpenSSL Toolkit (*http://www.openssl.org/*).

This product includes software written by Tim Hudson (*tjh@cryptsoft.com*).

This product includes cryptographic software written by Eric Young (*eay@cryptsoft.com*).

Open Source Software

The product contains, among other things, Open Source Software developed by third parties. The Open Source Software used in the product and the license agreements concerning this software can be found in the Readme_OSS. These Open Source Software files are protected by copyright. Your compliance with those license conditions will entitle you to use the Open Source Software as foreseen in the relevant license. In the event of conflicts between Siemens license conditions and the Open Source Software license conditions, the Open Source Software conditions shall prevail with respect to the Open Source Software portions of the software. The Open Source Software is licensed royalty-free. Insofar as the applicable Open Source Software License Conditions provide for it you can order the source code of the Open Source Software from your Siemens sales contact – against payment of the shipping and handling charges – for a period of at least 3 years after purchase of the product. We are liable for the product including the Open Source Software contained in it pursuant to the license conditions applicable to the product. Any liability for the Open Source Software beyond the program flow intended for the product is explicitly excluded. Furthermore, any liability for defects resulting from modifications to the Open Source Software by you or third parties is excluded. We do not provide any technical support for the product if it has been modified.

The ReadmeOSS documents for the product can be found here: *www.siemens.com/reyrolle*

Table of Contents

1 First Steps

1.1 Unpacking, Repacking, Returning, and Storing

Unpacking a Device

> **NOTE**
>
> Devices are tested before delivery. The test certificate is a component of the devices.

- Check the packaging for external transport damage. Damaged packing may indicate that the devices inside have also sustained damage.
- Unpack devices carefully; do not use force.
- To ensure that devices are in perfect mechanical condition, check the devices via a reception control.
- Check the enclosed accessories against the delivery note to ensure that everything is complete.
- Keep the packing in case the devices must be stored or transported elsewhere.
- Return damaged devices to the manufacturer, stating the defect. Use the original packaging or transport packaging where possible.
- Check that the mounting fixings are included.

Repacking a Device

- If you store devices after reception control, they must be packed in appropriate storage packaging.
- If the device is to be transported, pack it in transport packaging.
- Enclose the accessories supplied and the test certificate in the package with the device.

Returning a Device

- To return the device to the Siemens factory or any Siemens location, contact the customer support center and follow the instructions specified by them.

> **NOTE**
>
> Do not transport the device when it is activated. Before transportation, ensure that the device is **not in the battery power mode** and protective film is inserted between the battery clip and battery.
> Fit the battery cover again and screw it to the housing before transportation.

Storing a Device

- Only store devices on which you have carried out an incoming inspection. The incoming inspection is described in *1.3 Incoming Inspection* .
- 7SR46 device must be stored in rooms, which are clean and dry. Devices or associated replacement modules must be stored at a temperature of -25°C to +70°C.
- To retain the battery life during the transportation and storage, Siemens recommends maintaining the permissible temperature range from -20°C to +45°C.
- The relative humidity must be at a level where condensed water and ice are prevented from forming.
- If the device has been in storage for more than 2 years, connect it to an auxiliary voltage for 1 to 2 days. This action causes the electrolytic capacitors to form on the printed circuit board assemblies again.

Battery Disposal

- Comply with the relevant national/international regulations when disposing of batteries.
- The lithium battery contained in the device must be replaced by skilled personnel.
- Replace the dead batteries immediately and keep them out of reach of unskilled personnel.

⚠ **WARNING**

Warning about battery disposal.

Noncompliance with the safety instructions can result in severe injuries or considerable material damage.

✦   Batteries must be replaced by the ones recommended by Siemens. Replacing with the wrong type of batteries can cause an explosion hazard.

✦   Siemens recommended battery for replacement - CR123A Li non-rechargeable battery.

✦   Use an insulated tool for opening and closing the battery cover, as well as for removing and inserting the battery.

✦   When discharged, or when properly secured against short-circuit, lithium batteries can be disposed off through retailers or at depots run by competent organizations.

⚠ **DANGER**

Danger of explosion of the battery.

Noncompliance with the safety instructions can result in death, severe injury, or considerable material damage.

✦   Do not throw the lithium batteries into a fire.

1.2   Environmental Protection Hints

Disposal of Old Equipment and Batteries (Applicable only for European Union and Countries with a Recycling System)

The disposal of our products and possible recycling of their components after decommissioning has to be carried out by an accredited recycling company, or the products/components must be taken to applicable collection points. Such disposal activities must comply with all local laws, guidelines and environmental specifications of the country in which the disposal is done. For the European Union the sustainable disposal of electronic scrap is defined in the respective regulation for "waste electrical and electronic equipment" (WEEE).

The crossed-out wheelie bin on the products, packaging and/or accompanying documents means that used electrical and electronic products and batteries must not be mixed with normal household waste.

According to national legislation, penalties may be charged for incorrect disposal of such waste.

By disposing of these products correctly you will help to save valuable resources and prevent any potential negative effects on human health and the environment.

NOTE

Our products and batteries must not be disposed of as household waste. For disposing batteries it is necessary to observe the local national/international directives.

Disposal of Mobile Storage Devices (e.g. USB Sticks and Memory Cards)

When disposing of/transferring mobile storage devices, using the **format** or **delete** functions only changes the file management information and does not completely delete the data from your mobile storage device. When disposing of or transferring a mobile storage device, Siemens strongly recommends physically destroying it or completely deleting data from the mobile storage device by using a commercially available computer data erasing software.

REACH/RoHS Declaration

You can find our current **REACH/RoHS** declarations at:

https://www.siemens.com/global/en/home/products/energy/ecotransparency/ecotransparency-down-loads.html

NOTE

You can find more information about activities and programs to protect the climate at the EcoTransparency website:

https://www.siemens.com/global/en/home/products/energy/ecotransparency.html

1.3   Incoming Inspection

Safety Notes

⚠ **DANGER**

Danger during incoming inspection

Noncompliance with the safety notes, can result in death, severe injury, or considerable material damage.

✧   Comply with all given safety notes when carrying out the incoming inspection.

✧   Hazardous voltages are present when you perform the incoming inspection.

✧   If you identify a defect during the incoming inspection, do not rectify it yourself. Repack the device and contact the customer service center, stating the defect. If there is return, use the original packaging or transport packaging wherever possible.

Performing a Follow-Up Inspection on a Device

✧   Visually check for external damage when you have unpacked the devices; they must not show any signs of dents or cracks.

Checking the Rated Data and Functions

✧   Check the rated data and functions using the complete order designation/the product code. The device manual contains all technical data and a description of the functions.

✧   Check the information provided on the rating plate too. The device features a product label sticker, which contains the technical data.

✧   Make sure that the rated data of the device properly matches the system data. You can find the necessary information in the device manual.

1.4 Electrical Inspection

Device Protection

⚠ **DANGER**

Danger when connecting the 7SR46 device.

Noncompliance with the safety notes will result in death, severe injury, or considerable material damage.

❖   The device must be situated in the operating area for at least 2 hours before you connect it to the power supply for the first time. This prevents condensation from forming in the device.

❖   If the device has been in storage for more than 2 years, connect it to an auxiliary power supply for 1 to 2 days. This causes the electrolytic capacitors on the printed circuit-board assemblies to form again.

❖   Perform the inspection procedure below and follow the safety measures.

Activating the Battery

❖   Unscrew and open the battery compartment.

❖   To activate the battery, remove the protective paper strip from the battery by simply pulling on the paper strip.

❖   Push the battery compartment including the battery back in again and screw it to the housing (refer to *3.1 Battery Replacement*).

ℹ NOTE

The battery is covered by a paper strip, which prevents premature discharge.

The battery compartment is located on the front of the device. You do not have to take the battery out of the compartment in order to remove the paper strip.

Grounding a Device

The 7SR46 devices are protection class III equipment. The devices must be connected with the system earth prior to commissioning.

❖   The grounding cable must be wired using a non-stranded cable with a cross section of 4 mm^2/6 mm^2. This cable must be terminated in the shortest possible path to the ground terminal/bus bar in panel or cubicle.

Connecting a Device

❖   Connect the device as per the connection diagrams mentioned in the hardware manual.

❖   Tighten the terminal screws to the prescribed torques (see chapter *2.5 Connectors and Terminal Blocks Specification*).

Safety Notes

⚠ **DANGER**

Danger during electrical inspection

Noncompliance with the safety notes will result in death, severe injury or considerable material damage.

✧ Comply with all given safety notes when carrying out the electrical inspection.

✧ Note that hazardous voltages are present when you perform the electrical inspection.

✧ During the electrical inspection, check that the device becomes ready for operation once it has been connected to the power supply.

Performing the Electrical Inspection

✧ Connect the power supply.

✧ Activate the power supply.

✧ If the device does not assume the normal operating state, switch off the power supply. Disconnect the wiring and the earthing.

✧ Pack the device and return it to the manufacturer, stating the defect. Use transport packaging that meets the requirements of standard ISO 2248.

2 Installing the Device

2.1 Drilling Patterns and Device Dimensions

Dimensions in mm. Values in brackets in inches.

[dw_7SR46-casedimensions, 3, en_US]

Figure 2-1   Device Dimensions - Front View, Side View, Panel Cut-Out and Terminal View

(1)   Auxiliary power supply

(2)   Binary inputs/binary outputs/pulse output/flag output/external trip input

(3)   Protective grounding terminal

(4)   Rear communication port

(5)   Current inputs

2.2 Mounting Instructions

✧ The physical dimensions of the relay and the required cut-out dimensions are shown in *2.1 Drilling Patterns and Device Dimensions*.

✧ Insert the rear-side of relay into the RMU/Low Voltage (LV) compartment cut-out.

✧ Fasten the relay with 4 M4x20 Pan Phillips SS screws and nuts provided in the 7SR46 packing box. Use a torque of 0.5 Nm to 0.6 Nm.

✧ Carry out all other installation steps and wiring connections from the LV compartment.

✧ In the rear side of the relay, execute the wiring process as mentioned in the terminal diagram. Refer to *7SR46 Terminal/Wiring Diagram, Page 28* for more information.
Refer to *2.5 Connectors and Terminal Blocks Specification* for the recommended terminal lugs to be used.

✧ The grounding cable must be wired as indicated in *7SR46 Terminal/Wiring Diagram, Page 28* using a non-stranded cable of 4 mm^2/6 mm^2
This cable must be terminated in the shortest possible path to the protective grounding terminal or busbar in the LV compartment.

✧ To ensure safety and accidental touch of terminals, maintain a minimum clearance from the relay.
For more details about the minimum clearance, refer to *2.1 Drilling Patterns and Device Dimensions*.
If the working area is restricted in a cubicle, then suitable protective terminals must be provided in the cubicle.

NOTE

The ground connection of relay casing must be solidly connected to the panel ground.

2.3 Installing Devices

Preparations

> **NOTE**
>
> The installation depth for 1 device is at least 235 mm.
> The M4 holes are the holes for the fastening screws of the device.

> **NOTE**
>
> Use a combidrive screwdriver.
> For each device, you need 4 M4x20 Pan Phillips SS screws with nut.

> ⚠ **DANGER**
>
> Danger due to device being improperly screw-fastened
> **Incomplete and careless screw fitting results in death, severe injury, or considerable material damage!**
>
> ✧ Ensure that screw-fastening is complete at all intended bolting points. Tighten the screws with the nuts using a torque of 0.5 Nm to 0.6 Nm.

✧ If no assembly opening is present, then cut out the required assembly opening.

✧ Produce the holes as shown in the drilling plan.

Fitting Devices

✧ Detach the screws of each on-site operation panel.

✧ Insert the device in the installation opening. Make sure that the fastening screws of the on-site operation panels also protrude exactly into the openings.

✧ With the M4 screws, bolt down the device at the top and bottom at all 4 bolting points of the device.

✧ Check for secure attachment.

✧ Fit the top and bottom screws again.

> **NOTE**
>
> While retrofiting with existing CT, user must check device performance along with primary CT.

2.4 Earthing and Connecting Devices

Earthing the Devices

⚠ **DANGER**

Danger due to device being improperly earthed

Incomplete and careless earthing leads to death, severe injury, and considerable material damage!

✧ The device must be situated in the operating area for at least 2 hours before you connect it to the power supply for the first time. This prevents condensation from forming in the device.

✧ If the device has been in storage for more than 2 years, connect it to an auxiliary voltage for 1 to 2 days. This will cause the electrolytic capacitors to form on the printed circuit board assemblies.

✧ Wire the earthing cable using a non-stranded cable with a cross-section of 4 mm²/6 mm².

Terminate the wire in the shortest possible path to the earthing terminal or busbar in the panel or cubicle.

Connecting Devices

✧ Connect all cables and leads. Use the connection diagrams in the Hardware and Device manuals.

✧ Tighten the terminal screws to the prescribed torques.

2.5 Connectors and Terminal Blocks Specification
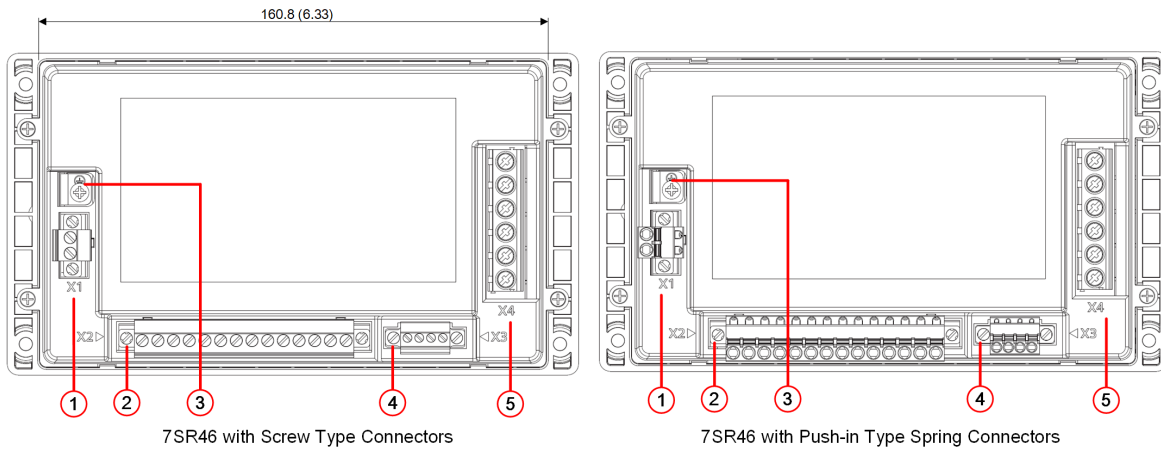
[dw_7SR46-rearterminals, 2, en_US]

Figure 2-2   Rear Terminal View with Connectors

(1)   Auxiliary power supply
(2)   Binary inputs/binary outputs/pulse output/flag output/external trip input
(3)   Protective grounding terminal
(4)   Rear communication port
(5)   Current inputs

Table 2-1   Recommended Terminal Lugs Specifications

Current inputs	Nylon-insulated cord end terminal, 4 mm^2
	Manufacturer/Part number: ENER , Mfr. Part No. ENEVN 4009 or equivalent
	Torque required: 0.8 Nm to 1 Nm
Auxiliary supply	For 7SR4605-3xB20-1AA0 device variant
	Connector type: screw connection with tension sleeve
	Wire end ferrule, insulated, 2.5 mm^2 , 8 mm
	Manufacturer/Part Number: Weidmueller, Mfr. Part No. 9019160000 or equivalent
	Torque required: 0.5 Nm to 0.6 Nm
	For 7SR4605-3xB21-1AA0 device variant
	Connector type: Push-in spring connection
	Wire end ferrule, insulated, 2.5 mm^2 , 12 mm
	Manufacturer/Part Number: Weidmueller, Mfr. Part No. 9019170000 or equivalent
	Interlock flange tightening torque: 0.3 Nm
Rear communication port	For 7SR4605-3xB20-1AA0 device variant
	Connector type: screw connection with tension sleeve
	Nylon insulated cord end terminal, 1.5 mm^2 , 8 mm
	Manufacturer/Part No.: ENER, Mfr. Part No. ENEVN 1508 or equivalent
	Torque required: 0.22 Nm to 0.25 Nm
	For 7SR4605-3xB21-1AA0 device variant
	Connector type: Push-in spring connection
	Nylon insulated cord end terminal, 1.5 mm^2 , 10 mm
	Manufacturer/Part No.: ENER, Mfr. Part No. ENEVN 1510 or equivalent
	Interlock flange tightening torque: 0.3 Nm

Front communication port	USB, type B
	Manufacturer/Part Number: Tyco/974329-1 or equivalent
Binary input/binary output/pulse output/flag output/external trip input	For 7SR4605-3xB20-1AA0 device variant
	Connector type: screw connection with tension sleeve
	Wire end ferrule, insulated, 2.5 mm^2 , 8 mm
	Manufacturer/Part Number: Weidmueller, Mfr. Part No. 9019160000 or equivalent
	Torque required: 0.5 Nm to 0.6 Nm
	For 7SR4605-3xB21-1AA0 device variant
	Connector type: Push-in spring connection
	Wire end ferrule, insulated, 2.5 mm^2 , 12 mm
	Manufacturer/Part Number: Weidmueller, Mfr. Part No. 9019170000 or equivalent
	Interlock flange tightening torque: 0.3 Nm
Protective grounding terminal	Insulated ring terminal, M3 stud size, 4 mm^2 to 6 mm^2, 12 AWG to 10 AWG
	Manufacturer/Part Number: RS Stock No. 613-9334 or equivalent
	Torque required: 0.5 Nm to 0.6 Nm

2.6 7SR46 Connection Diagram and Terminal Labels

7SR46 Terminal/Wiring Diagram
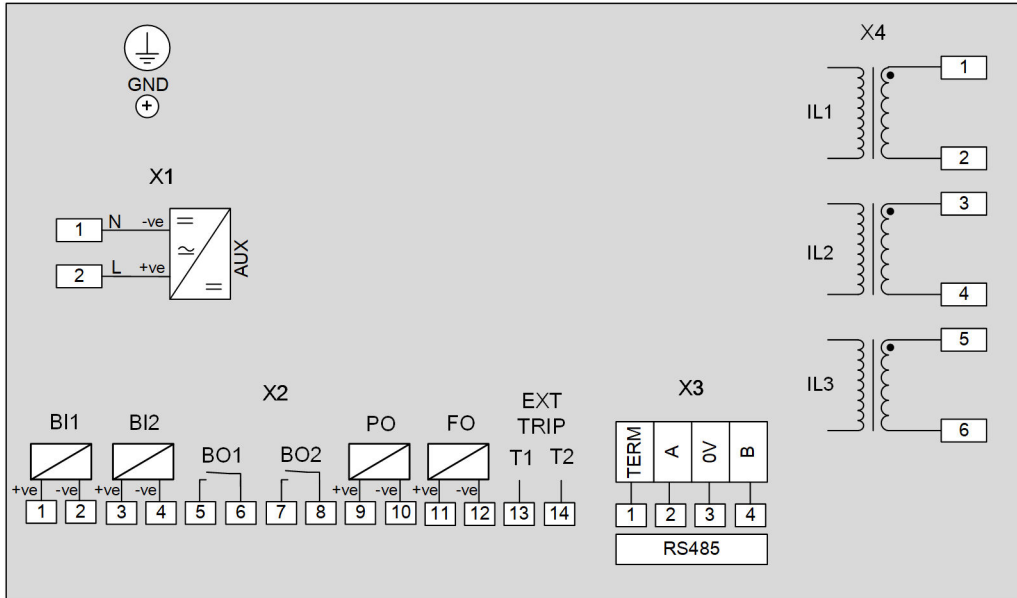
[dw_7SR46_connection and terminal diagram, 2, en_US]

Figure 2-3   Connection Diagram and Terminal Label

3 Handling of the Device

3.1 Battery Replacement

You can replace the 7SR46 Argus Relay battery when it is damaged or exhausted. To replace the battery, follow the procedure:

⚠ **CAUTION**

Caution while replacing the battery.

Risk of fire if the battery is replaced with incorrect type or polarity.

✧ Comply with all given instructions when carrying out battery replacement.

✧ Batteries can only be replaced by the ones recommended by Siemens. Replacing with the wrong type of batteries can cause an explosion hazard.

✧ Siemens recommended battery for replacement - CR123A Li non-rechargeable battery.

✧ Open the 7SR46 Argus Relay battery cover by unscrewing the screw on the cover.
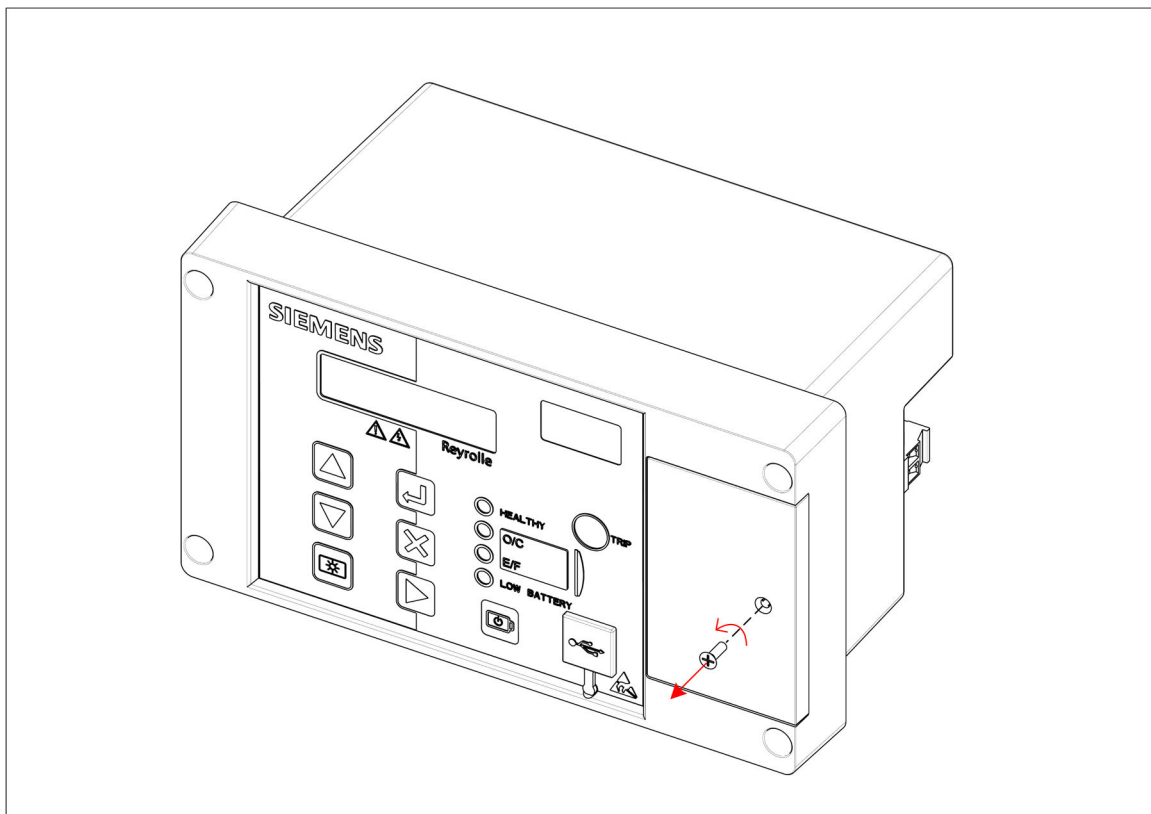
[dw_7SR46_batteryreplacement_step1, 1, --_--]

Figure 3-1   Removing the Battery Cover

✧ Remove the damaged or exhausted battery from the battery clip.
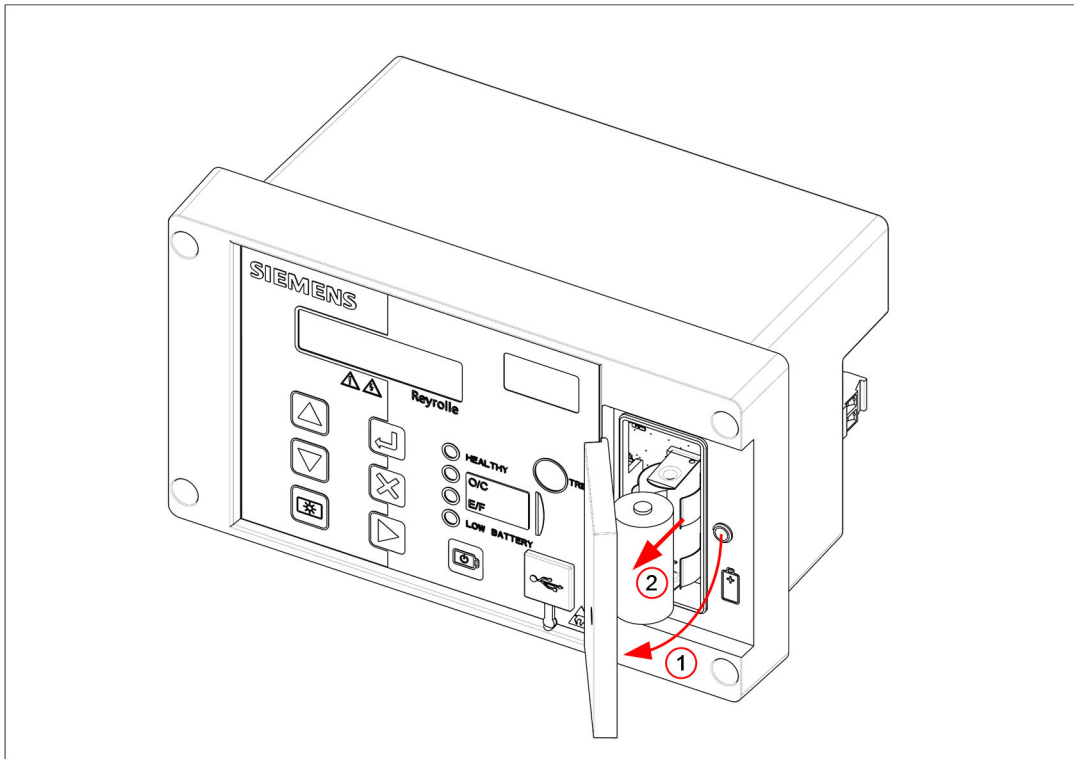
[dw_7SR46_batteryreplacement_step2, 1, --_--]

Figure 3-2   Removing the Battery

✧   Insert the new battery in the battery clip with the **correct polarity** as indicated.
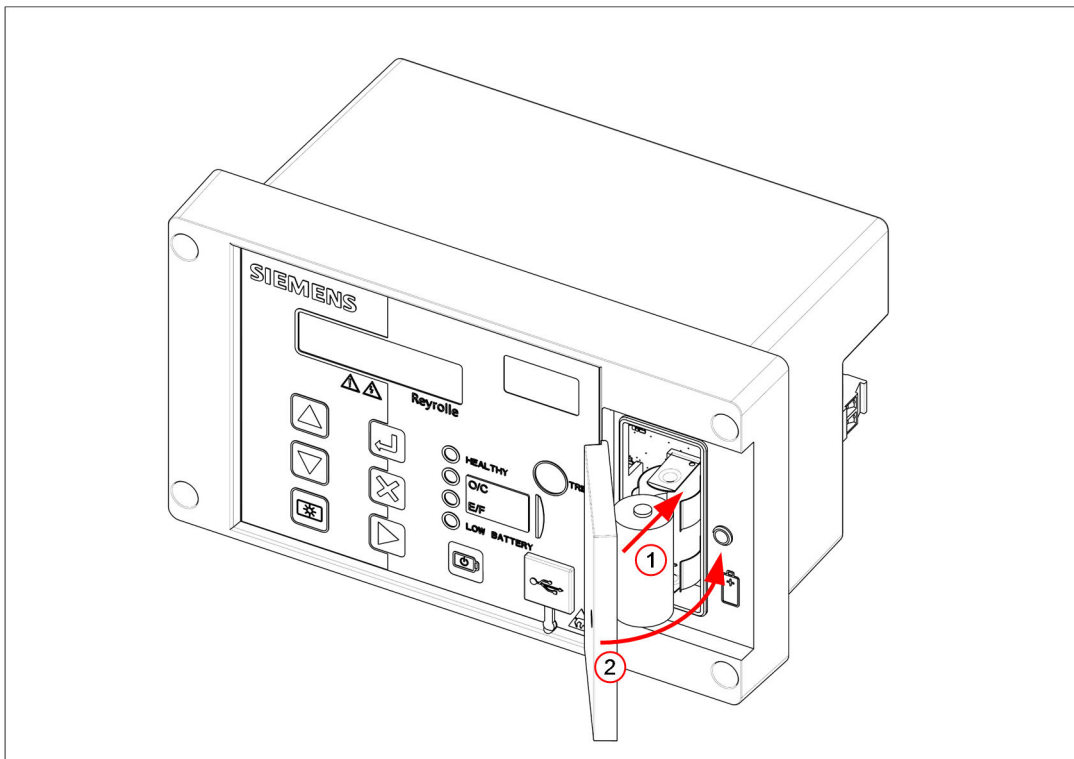
[dw_7SR46_batteryreplacement_step3, 1, --_--]

Figure 3-3   Inserting the New Battery

✧   Close the battery cover again and fasten it by screwing the screw on the cover.
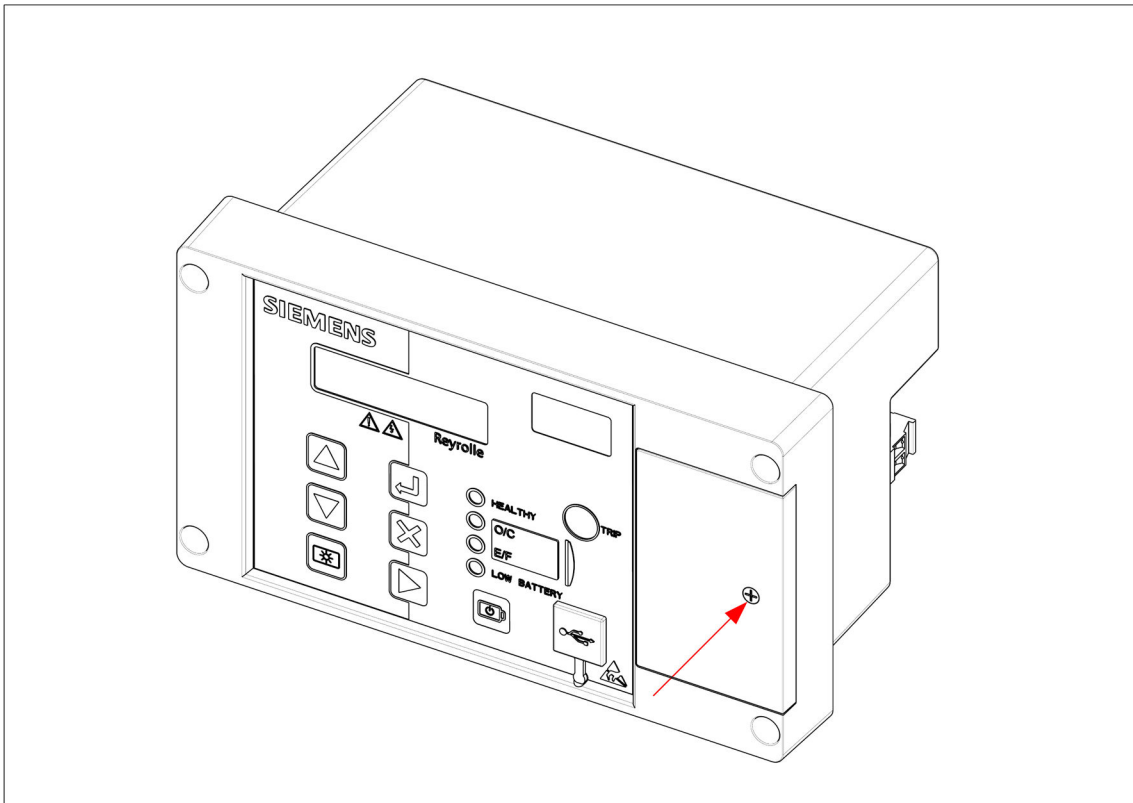
[dw_7SR46_batteryreplacement_step4, 1, --_--]

Figure 3-4   Placing the Battery Cover

✧   After replacing the battery and in the absence of auxiliary power, phase current, low input current, and without USB connection, test the relay by pressing the BAT ON/OFF key to confirm the relay functionality.

NOTE

Siemens recommends keeping the spare battery on a non-conductive surface to avoid any terminal shortages.

NOTE

After replacing the battery, sync the RTC time via Reydisp Evolution or through HMI.

3.2 Post Installation and Commissioning

Execute the following procedure after installation and commissioning of the 7SR46 Argus Relay.

Open the 7SR46 Argus Relay battery cover by removing the screw.
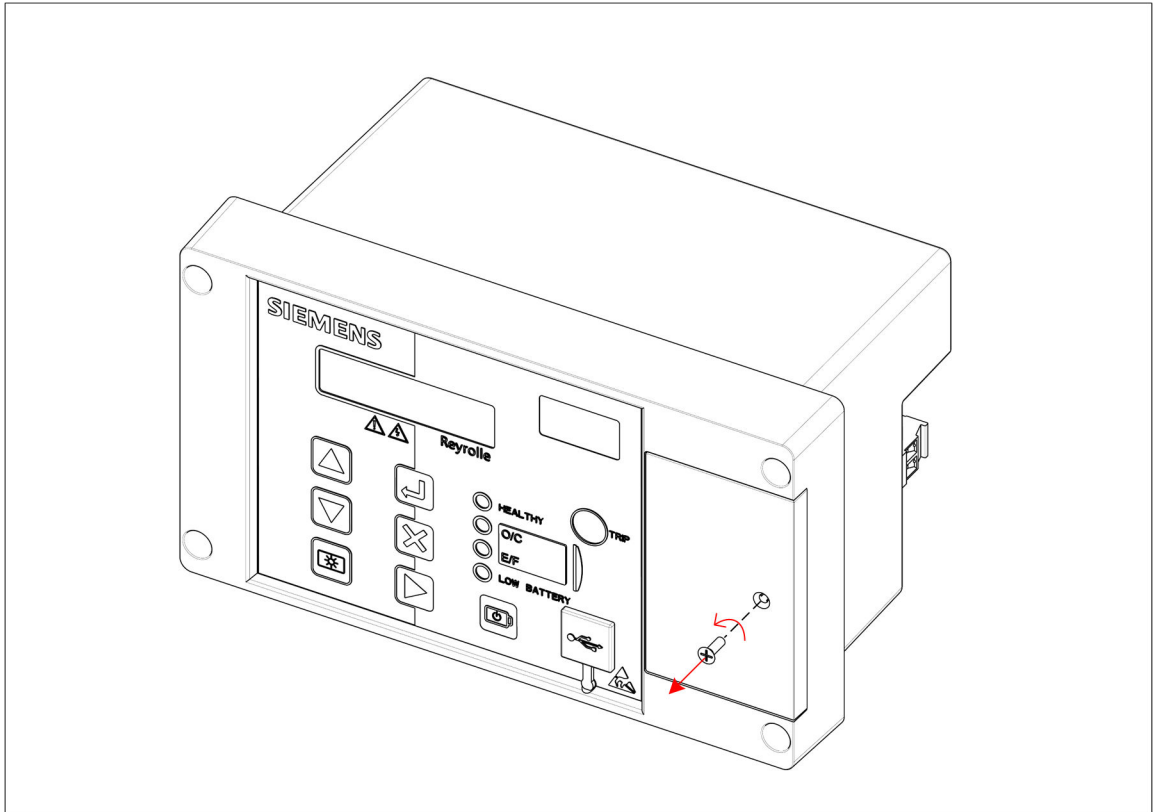
[dw_7SR46_batteryreplacement_step1, 1, --_--]

Figure 3-5   Opening the Battery Cover

To start the 7SR46 Argus Relay, remove the paper strip between the battery clip and battery.
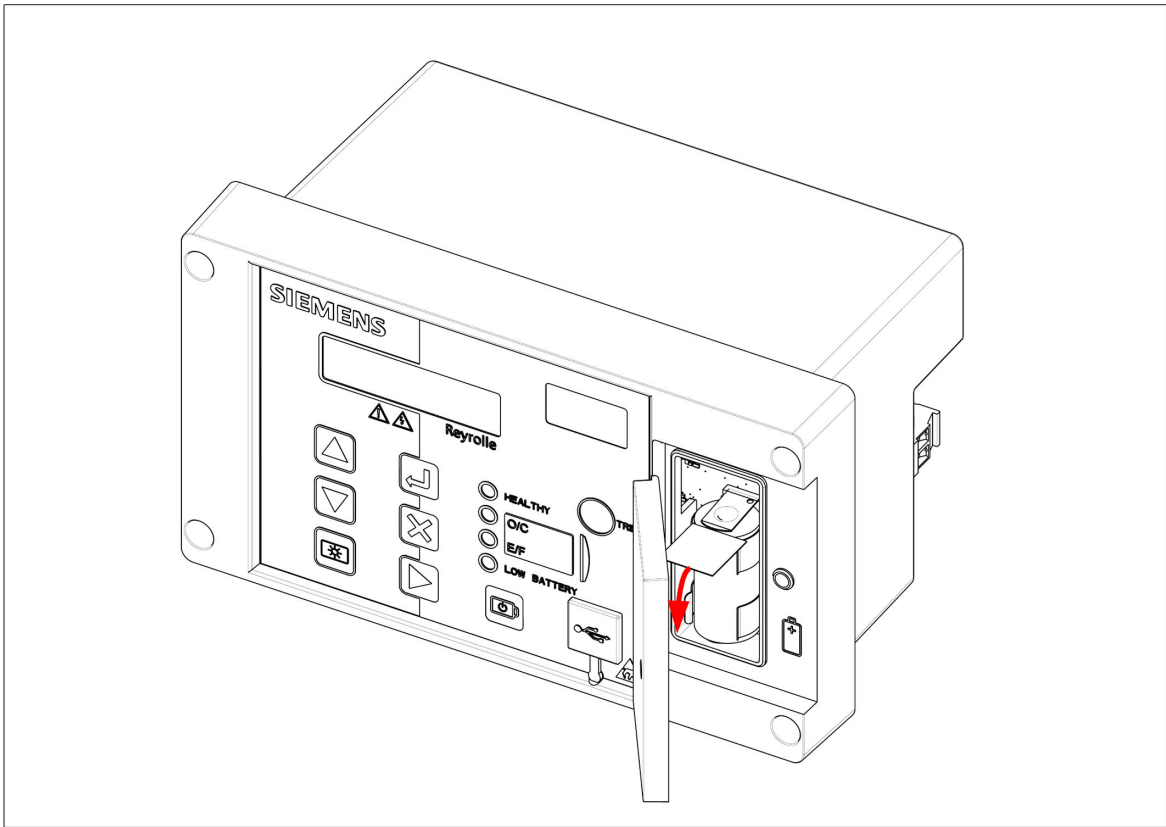
[dw_7SR46_postinstallation_commissioning_step2, 1, --_--]

Figure 3-6   Removal of Paper Strip

Close the battery cover again and fasten it by screwing the screw on the cover.
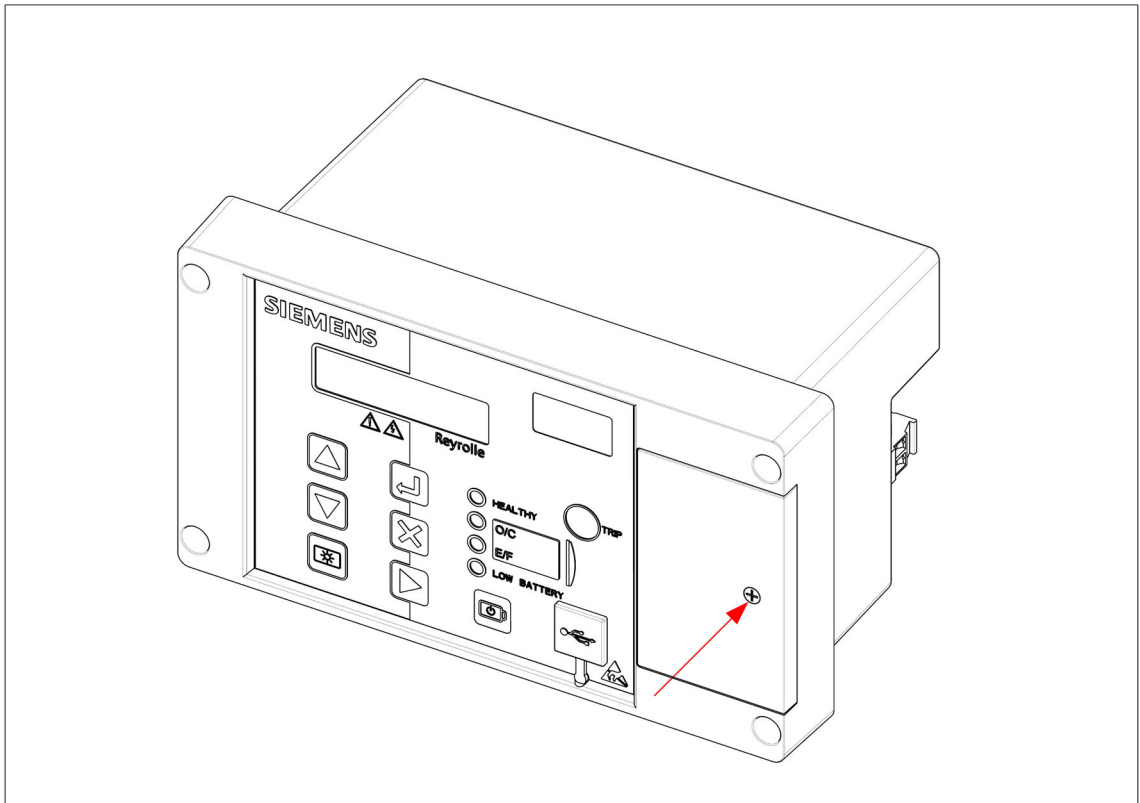
[dw_7SR46_batteryreplacement_step4, 1, --_--]

Figure 3-7   Closing the Battery Cover

3.3 Replacement of the Device

Preparing for Replacement

⚠ **DANGER**

Danger due to live voltage when replacing the plug-in modules.

Noncompliance with the safety notes will result in death or severe injuries.

✧ Install the device on the electrically deactivated device only.

✧ De-energize the device.

✧ Remove all connecting leads.

✧ Unscrew the fixed device.

✧ Carefully pull out the device.

Fastening the Device

✧ Insert the new relay into the panel opening.

✧ Fix the device on the panel.

ⓘ **NOTE**

The torque is indicated in the package or description of the device.

✧ Connect the leads to the terminals.

✧ Check for secure attachment of the connectors.

✧ If necessary, fit the on-site operation panel again.

Completing Replacement

✧ Place the device in service again

4 Using the Device Fascia

4.1 General

The fascia allows you to access all the push-buttons and to perform the setting changes and control actions. By using the ► key, the fascia provides an option to reset the fault data display, latched binary output, and LEDs. The front fascia contains a predefined LED list which provides the information about the LED indicators. The operation of the relay is performed via the keypads.
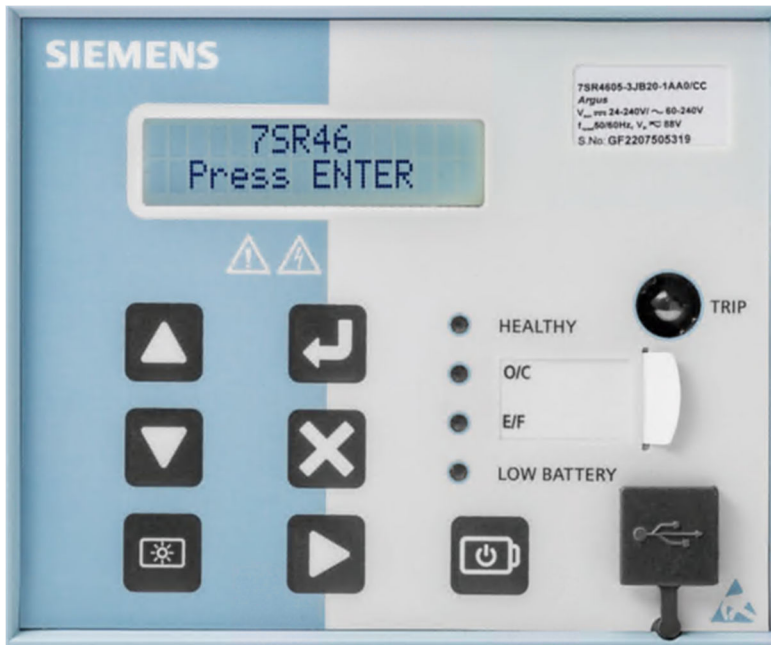
[sc_7SR46_fascia, 2, en_US]

Figure 4-1   Front Fascia

Operating Concept

The operating concept allows you to do the following on-site operator control actions:

- Navigation in the menu tree
- View and modification of parameter setting values
- Resetting saved information
- Showing default displays, measured values and logs
- Executing switching operations
- Status display with LED
- Function configuration
- Configuring inputs, outputs and LEDs
- CT configuration
- Display device information such as firmware version

4.2 Overview of Operator Elements and Display Elements

Operation Panel of the Device
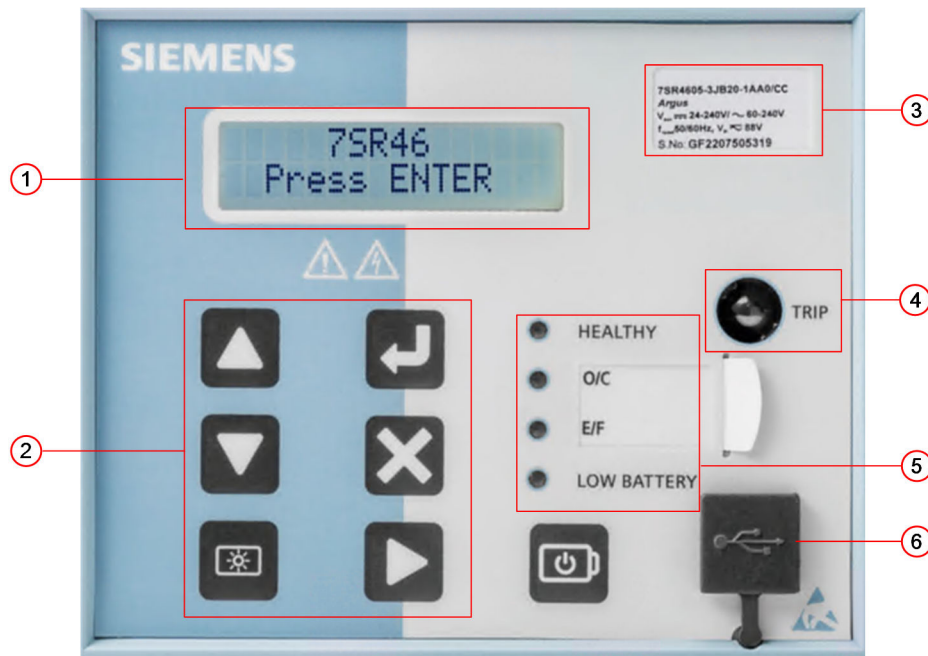
[le_7SR46 user interface, 2, en_US]

(1)   LCD
(2)   Push-buttons
(3)   Rating Label
(4)   Local flag
(5)   2 non-programmable LEDs and 2 user-programmable LEDs
(6)   USB port

The following table provides a detailed explanation of the function of the operator and display elements.

Table 4-1   Overview of Operator Elements and Display Elements

Operator Element/Display Element	Function
	LCD Display Display: 2 x 16 alphanumeric characters LCD display showing menus and settings
Navigation keys	By pressing or holding down the navigation keys, you can navigate in the menus, lists, and the graphical images (default display).
	Up button Navigate the menu structure or to increase the parameter value in the edit mode.
	Down button Navigate the menu structure or to decrease the parameter value in the edit mode.

Operator Element/Display Element	Function
▶	Navigation button or **TEST/RESET** button To reset the fault indication on the fascia. Also used for selecting the menu or selecting parameter values in the edit mode. You can acknowledge the LEDs, binary output, and trip flag indication.
↵	Enter button Used for selecting the parameter or confirming the values. The **ENTER** push-button is used to initiate and accept the setting changes. Press **ENTER** to edit the parameter setting. The setting value flashes and can be changed by using the ▲ or ▼ keys.
✕	Used to return the relay display to its initial status or one level up in the menu structure. Press **CANCEL** to return to the previous menu or to cancel the value. This push-button is used to reject any alterations to a setting while in the edit mode. Press the **CANCEL** key repeatedly to return to the **Relay Identifier** screen.
(power/battery icon)	Used to power on and power off the relay with battery power when the auxiliary power, CT power, and USB power are not available.
(backlight icon)	Used to turn on and turn off the backlight.
LED 1 → HEALTHY (Green LED)	Indicates the relay protection function in a healthy state.
LED 2 and LED 3 → (Red LEDs) Default value • LED 2: O/C • LED 3: E/F	LEDs L2 and L3 are user-programmable LEDs. They indicate when the respective mapped function is triggered. By default, LED 2 is mapped to 50-1 & 51-1 function and LED 3 is mapped to 50N-1 & 51N-1 function.
LED 4 → LOW BATTERY (Amber LED)	The battery voltage is less than the operating voltage.
⚡	Danger: Electrical hazard
⚠	Refer to device documentation (Device manual, Hardware manual, Operating manual, Engineering Guide, and Communication protocol manuals)
(ESD icon)	Electrostatic sensitive devices warning

4.3 Software Version Menu

The software version menu can be viewed by pressing the **x** key (CANCEL key) and the ► key (TEST/RESET key) on the home screen simultaneously. You can view the software information by pressing the ▲ or ▼ key.

The software version menu contains the following information:

Software Version Menu	Description
Firmware Art No.	The firmware article number installed in the relay
Build Date	The date of software version builds
Build Time	The time of software version builds
Serial No	The serial number of the relay
MLFB	The ordering code of the relay
Product Name	Product name for display
Product Art No	Unique number of the product assigned by Siemens

4.4 Structure of the Menu

4.4.1 Relay Menu

7SR46 Argus menu structure has the following main modes:

- Setting Mode
- Instrument Mode
- Fault Data Mode

Setting Mode
This mode allows you to view and change settings in the relay. This mode allows you to test BO and PO.
This mode allows you to clear the faults, events, reset thermal level and battery data.

Instrument Mode
This mode allows you to view the following conditions of the relay:

- Current Meter
- Thermal Meter
- Binary I/P Meter
- ET I/P Meter
- Binary O/P Meter
- Gen Alarm Meter
- Misc Meter
- Battery Profile

Fault Data Mode
This mode allows you to view fault records.

The relay menus can only be viewed, once the password (confirmation ID) is entered. Further actions are permitted when the correct password is entered.
When the relay is shipped from the factory, all the stored data is cleared and the confirmation ID is set to **NONE**.

4.4.2 Setting Mode

The **SETTING MODE** is reached by pressing the **READ DOWN(▼)** or by pressing the **ENTER** key from the **Relay Home Screen/Identifier Screen**.
Once the setting mode is reached, you can navigate into the settings mode submenus.

Each submenu contains the configurable settings of the relay in separate groups. The submenus are accessed by pressing the ► key (TEST/RESET key). Press the ▲ or ▼ keys to scroll through the first and last settings. If the keys are pressed further from the first and last settings submenu, it exits from the submenu and returns to the previous menu.

Press the **ENTER** key to edit the setting value. If the relay setting is password protected, you are prompted to enter the password. Settings changes are only allowed after the correct password is entered. If an incorrect password is entered, editing is not permitted. The password is not required to view and navigate to all screens.

When a setting is edited, flashing characters indicate the edit field. Press the ▲ or ▼ key to scroll through the valid field values. Hold the ▲ or ▼ keys to increase the rate of scrolling. To navigate between the digits of the setting values, press the **TEST/RESET►** key.

Once you update the setting, press the **CANCEL** key to return to the **Relay Identifier Screen**. The LCD displays the **Save & Restart** prompt message. Press **ENTER** to store the setting in non-volatile memory and the relay restarts. Press the **CANCEL** key to discard the changed settings.

4.4.3 Instrument Mode

The instrument mode submenu displays the current values, status of binary inputs, external trip input, and binary outputs. The following meters are available and can be navigated by using the ▲, ▼, and ► keys.

Table 4-2   Instrument Mode

Instrument	Description
CURRENT METER → to view	This subgroup includes all the meters that are associated with current. ► key allows you to access the subgroup. The value of current refresh at every 1-s interval.
Primary Current I_a 0.00A I_b 0.00A I_c 0.00A I_n 0.00A	Displays the primary values of 3 phase currents and derived earth currents.
Nominal Current I_a 0.00 * I_s I_b 0.00 * I_s I_c 0.00 * I_s I_n 0.00 * I_s	Displays the primary values of 3 phase currents and derived earth currents in terms of I_s.
2ndHarm. Current I_a 0.000A I_b 0.000A I_c 0.000A	Displays the second harmonics values of 3 phase currents.
BINARY I/P METER → to view	Binary input meter displays the status of the binary input signals. The ► key allows you to access the subgroup. The value of binary input status refreshes at every 1-s interval.
THERMAL METER → to view	Thermal meter displays the status of equipment thermal level. **TEST/RESET►** key allows you to access the subgroup
Thermal Capacity θ 0.0%	Displays the thermal level of the protected equipment. The value of thermal capacity refreshes at every 1 s interval.
BI 1-2 _ _	Displays the state of the binary inputs 1 to 2. If the status is _, the value is 0. If the status is 1, the value is 1.
ET I/P METER	External trip input meter displays the status of the external trip input (ETI) signals. As ETI works on scanning principle (5 s OFF / 1 s ON), the value of ETI takes at most 5 s to update.
ET 1 _	Displays the state of the external trip input 1. If the status is _, the value is 0. If the status is 1, the value is 1.
BINARY O/P METER → to view	Binary output meter displays the status of the binary output signals. ► key allows you to access the subgroup. The value of BO status refreshes at every 1-s interval.

Instrument	Description

`BO 1-2`
 	
`_ _`
	Displays the state of the binary outputs 1 to 2.
	
	If the status is _, the value is 0. If status is 1, the value is 1.

`GEN ALARM METER` → to view	The general alarm meter displays the status of the general alarms. The ► key allows you to access the subgroup. The general alarm status refreshes at every 1-s interval.
`ALARM1` Cleared `ALARM2` Cleared `ALARM3` Cleared	Displays the state of general alarms 1 to 3. The alarm can be renamed in the settings menu and the updated name appears in this window. The status can be **Cleared** or **Raised** depending on the binary input linked to the general alarm.
`MISC METER`	The Misc. meter gives more information about the active settings group, fault records, event records in the device, status of auxiliary input and IRF. For more information about IRF, refer to Self monitoring.
`BATTERY PROFILE`	The battery profile meter displays the status of the operations performed on the battery power.

4.4.4 Fault Data Mode

The 7SR46 Argus Relay stores a maximum of 10 fault records. Each stored fault data can be viewed by pressing the ► key (TEST/RESET key). Each record contains data of the operated elements, analog values, and LED status at the time of the fault. The data is viewed by scrolling down using the ▼ key.

4.4.5 Menu Tree
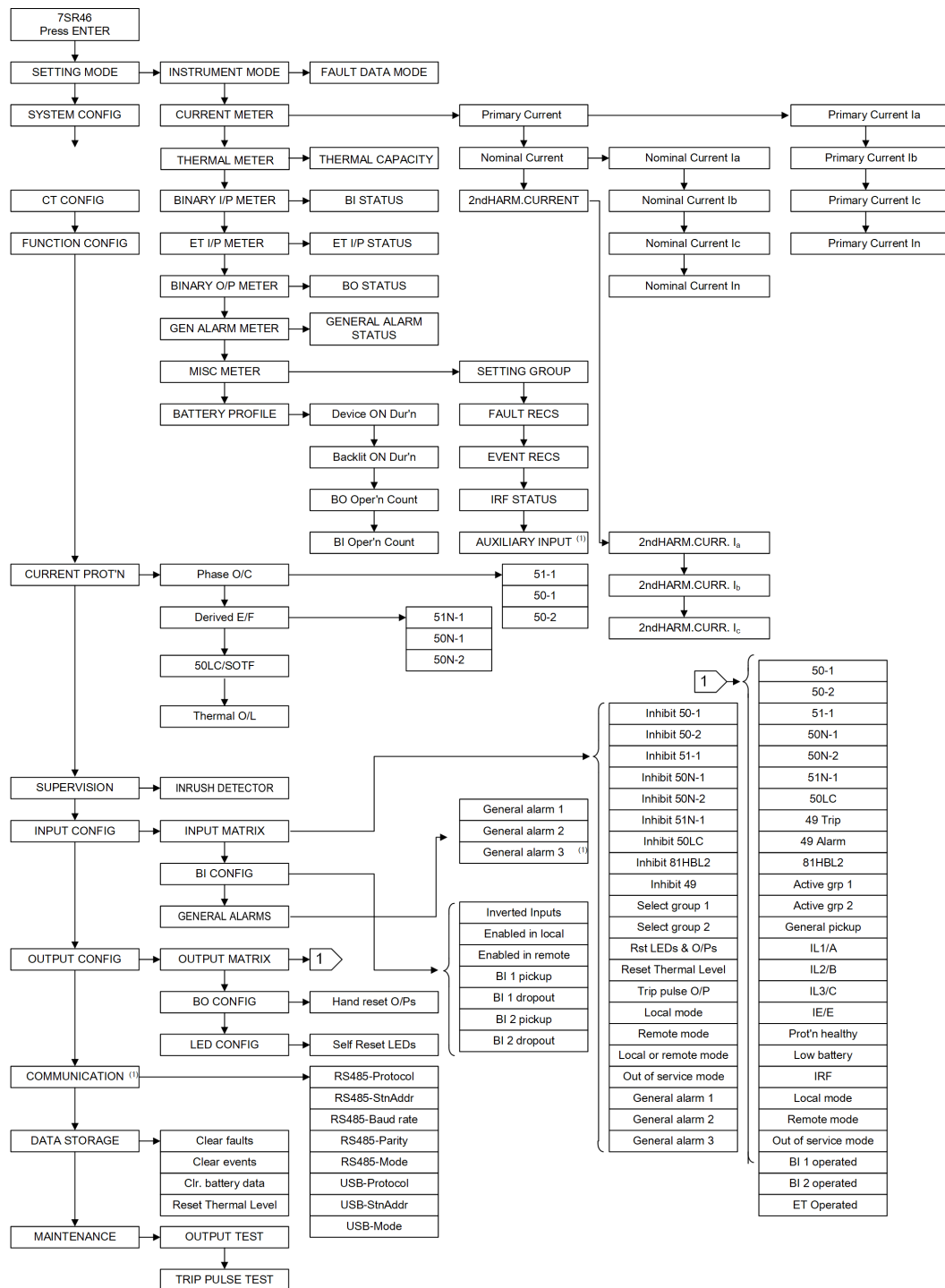
[dw_menu-structure, 2, en_US]

4.5 Notification Alerts

4.5.1 Fault Alert (Trip Alert)

When the 7SR46 relay detects any fault, the LCD displays the fault alert. The latest message updates or replaces any earlier alert pop-up messages.

4.5.2 Alarm Alert

The alarm alert appears when any binary input or external trip initiation input is configured for general alarm and it is triggered.

4.5.3 Info Alert

The info alert displays the following required information for 2 s and the alert disappears automatically.

Table 4-3   Info Alerts

Info Alert	Description
❋ TIME OUT ❋	This alert appears during the edit mode and the edited parameter value blinks on the LCD. After 15 s of inactivity, the edited value of the parameter is discarded.
❋ LED TEST ❋ ❋ FLAGS RESET ❋	This alert appears when the fault flags are reset and an LED test is performed.
❋ FLAGS RESET ❋	This alert appears when the fault flags are reset.
❋ FAULT ❋ ❋ PERSISTS ❋	This alert appears when the reset of the fault flag has failed due to the presence of fault current and the fault persists.
❋ FAULT/MAINT ❋ ❋ PERSISTS ❋	This alert appears when reset of the fault flag is failed due to the presence of fault current. This alert also appears due to the presence of a binary input signal during maintenance.
❋ USB ❋ ❋ DETECTED ❋	This alert appears when you connect to the USB host.
❋ PASSWORD ❋ ❋ NOT MATCH ❋	Enter the password twice for confirmation or changing a password. This alert message appears when the password does not match with the previously typed password.
❋ INVALID ❋ ❋ CHARACTER ❋	This alert appears when the password entered by you contains any special characters other than + and - or / when changing the password.
❋ RECORD ❋ ❋ CLEARED ❋	This alert appears when you select to clear the fault or event records and the operation is successful.

Info Alert	Description
❋ BATTERY ON ❋	This alert appears when the relay is powered on in the battery mode.
❋ HIBERNATE ❋	This alert appears when the relay goes into sleep mode.
❋ INSUFFICIENT ❋ ❋ ENERGY ❋	This alert appears when there is insufficient energy to perform the following actions: • Turn on backlight • To operate or reset the binary outputs
❋ FAULT IS NOT ❋ ❋ ACKNOWLEDGED ❋	This alert appears when you select to clear the fault records without acknowledging the latest fault by resetting the flag.
❋ CT INPUT ❋	This alert appears when the relay is powered with phase CT.
❋ AUX POWER ON ❋	This alert appears when the relay is powered with auxiliary power supply.

4.5.4   Parameter Edit Screen

7SR46 Argus Relay allows you to edit the parameter value in the LCD.

To edit any parameter, follow the procedure:

✧   From the **Relay Identifier** screen, navigate to the **Parameter** screen.

✧   In the **Parameter** screen, press **ENTER** key to display the edit screen.

✧   In the **Edit** screen, you can edit the parameter value in the editable field.

✧   Press ▲ key and ▼ key to select the valid value.

✧   Press **ENTER** to save the parameter value.
    To discard the parameter value, press the **CANCEL** key.

✧   Press **CANCEL** until the **Save and Restart** pop-up screen is displayed.

✧   Press **ENTER** to save the configuration in memory.

5 Using Reydisp Evolution

5.1 General

Reydisp Evolution is a Windows based suite of software tools, providing the means for the user to fully configure the 7SR46 Argus relay. The setting configuration tool allows you to apply settings, interrogate settings and retrieve events from the device. It is compatible with Microsoft Windows XP SP3 or later, Windows Vista, and Windows 7 and 10.

The following 7SR46 applicable features are provided:	
Data Download	• Settings
	• Events including spontaneous events
	• Faults
	• Instruments
	• System information
	• Data directory
	• Device's built in Help
Settings Manipulation	• Edit settings
	• Upload settings
	• Store and retrieve settings
	• Get and switch active settings group
	• List settings group in English
	• Compare settings
Device Control	• Login/Logout
	• Reset events
	• Reset flags
	• Close output relay
	• Set device time
	• Map networked devices
	• Automatic polling of devices
Communication Features	• Direct RS232 connection
	• Connection via USB to suitable devices
Usability Features	• Save to & open from disk
	• Printing
	• Windows clipboard functions
	• Configurable button bar
	• Configurable confirmation safety options

5.2 Connecting to the Relay for Setting via Reydisp Evolution

When Reydisp Evolution software is running, all available communication ports are automatically detected. On the start page toolbar, open the submenu `File` and select `Connect`.

The `Connection Manager` window displays all available communication ports. With the preferred port highlighted, select the `Properties` option and ensure the baud rate and parity match that selected in the relay settings. Select `Connect` to initiate the relay-PC connection.
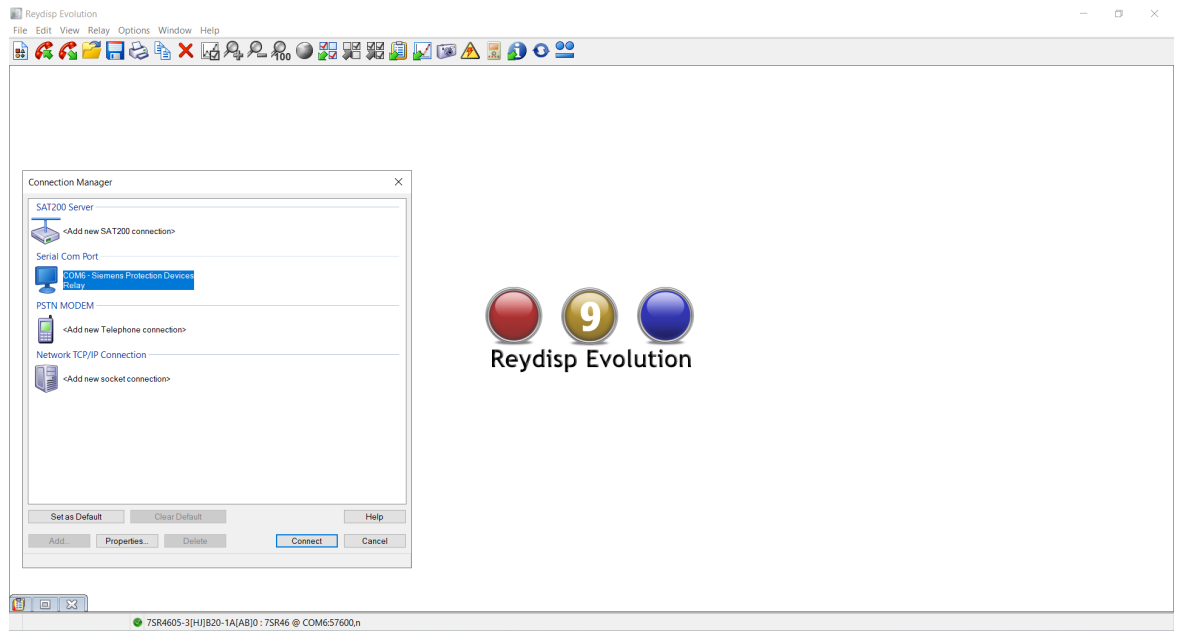
[sc_reydisp_conn, 1, --_--]

Figure 5-1   PC COM port Selection

-

The relay settings can now be configured using the Reydisp Evolution software.

NOTE

- In Reydisp Evolution, verify that **Do not check communication connection** is selected in the **Advanced** properties

- In Reydisp Evolution, ensure that the Relay Address in the Relay menu is the same as that of the Device address for the 7SR4605-3[H/J]B20-1Ax0 variant.

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6 In Service Operation

6.1 Overview

This section describes the handling of a 7SR46 Argus relay in the operating state. It contains the following information:

- Reading information from the device
- Using the functions of the device when in service

6.2   Safety Notes

Authorized Operational Crew

⚠️ **DANGER**

Danger due to inadmissible or improper operator control actions.

Noncompliance with the safety notes will result in death or severe injuries.

✧   Only personnel who are skilled electricians with precise knowledge of the system must operate devices during operation.

✧   Carry out all operator control actions in the indicated sequence.

ℹ️ **NOTE**

Operator control actions are password protected. This ensures that only operational crew members with access rights can use the device during operation.

6.3 General Operations

The device is operated via a PC with Reydisp Evolution or directly on the relay fascia. You have the following operation options during service:

- Readout of indications

- Readout, backup, and deletion of event logs, battery profile, and fault records

- Changing device settings such as date, time

- Changing passwords

- Changing function parameters and switching off settings groups

- Switching operating modes

6.4 Power Options

6.4.1 Overview

The 7SR46 Argus Relay can be powered on by using the following sources:

- Auxiliary power supply
- CT input
- USB power
- Battery

The 7SR46 Argus relay is powered primarily from auxiliary power supply even if all other power sources are available. In the absence of auxiliary power supply, the relay is powered through phase currents. It is also referred to as CT power.

In the absence of both auxiliary power and phase currents, the relay is powered on by USB power or battery.

In the absence of auxiliary power supply, phase currents, and USB power, the relay can be powered on by battery only.

Table 6-1   Peripheral Operations in Different Power Sources

Power Source	Peripherals Operational
Auxiliary Power Supply	Binary input, binary output, pulse output, remote flag, local flag, LED, external trip input, RS-485 communication, LCD backlight
CT Input	Binary input, binary output, pulse output, remote flag, local flag, LED, external trip input[1], RS-485 communication[1], LCD backlight[1]
USB Power	Binary input, binary output, LED, LCD backlight, pulse output[2], remote flag[2], and local flag[2]
Battery	Binary input, binary output, LED, LCD backlight, resetting local flag

6.4.2 Auxiliary Power Supply

When the 7SR46 Argus Relay is powered with auxiliary power supply, all the protection and measuring algorithms and RS485 communication (Rear port) are active.

6.4.3 CT Input

When the 7SR46 Argus Relay is powered through phase current transformers and the auxiliary voltage is absent, all the protection and measuring algorithms are active $0.8 \cdot I_{smin}$ (1-phase) and $0.4 \cdot I_{smin}$ (3-phase). RS485 communication is operational when current above $1.62 \cdot I_{smin}$ (1-phase) or $0.6 \cdot I_{smin}$ (3-phase).

Table 6-2   Minimum Current Requirements for Peripheral Operations in Self-Powered Mode

Peripherals	1-Phase ($\cdot I_{smin}$)	3-Phase ($\cdot I_{smin}$)
Binary output, binary input, pulse output, flag output, local flag, and external trip input	0.8	0.4
RS-485 communication	1.62	0.6
LCD Backlight	1.82	0.62

---

1   Refer to *6.4.3 CT Input* for corresponding current ratings.

2   Is operational only under Maintenance menu.

6.4.4 USB Power

In the USB mode, you can edit all the settings even if the protection functions are inactive. The binary inputs and binary outputs are operational in the USB mode. In the USB mode, the reset of the local flag indicator, binary output, and LED possible. The pulse output and remote flag output can be operated on USB power under **Maintenance Menu**.

6.4.5 Battery

The 7SR46 Argus relay is provided with CR2/3AZ battery. The battery is used to energize the device when auxiliary voltage or phase current or USB are not available. You can perform actions such as viewing the fault records, setting change, and resetting the flags with battery power.

The relay can be powered on by the battery only if all other power sources are not available.

In the battery mode, the relay can be energized by pressing the **BAT ON/OFF** key or if any binary input status is changed.

In the battery mode:

- You can edit all the settings even if the protection functions are inactive.

- The binary inputs and binary outputs are operational.

- The local flag indicator reset is possible.

- The pulse output, remote flag output and external trip input cannot be operated in battery mode.

- If no keys are pressed for 60 s, then the relay goes in to sleep mode automatically.

By default in the battery mode, if the backlight is off, then the battery/relay can be turned on by pressing the backlight key.

Battery Profile

The battery profile menu provides the overview of the consumption of battery power of the different application modules.

Table 6-3 shows the battery profile parameter data and the status of the operations performed on the battery power.

Table 6-3   Battery Profile Parameters

Battery Profile Parameter	Description	Unit
Device ON Dur'n	The duration of the device powered on with the battery source only.	Seconds
Backlit ON Dur'n	The duration of the LCD backlight powered on with the battery source only.	Seconds
BO Oper'n Count	The number of times the binary outputs operate with the battery source only.	-
BI Oper'n Count	The number of times the binary inputs operate with the battery source only.	-

The battery profile parameters data can be cleared with the **DATA STORAGE** >**Clr Battery Data** setting in the HMI.

NOTE

When replacing the battery, clear the battery profile parameters data in the HMI.

Sleep Mode

The 7SR46 Argus Relay goes into sleep mode when the auxiliary power/CT power, and USB power are not available. When the relay is in sleep mode, you can access the LCD by pressing the **BAT ON/OFF** key. If there is inactivity, the relay goes to the sleep mode after 60 s.

When the relay is powered using CT power and auxiliary power is not available, if any fault occurs in the system and the phase CT currents are disconnected, the relay goes to the sleep mode automatically.

If the relay is powered on via USB power mode and the USB cable is removed, then the relay goes to the sleep mode automatically.

Low Battery Status Indication

The **LOW BATTERY** LED indication is displayed when the battery voltage falls below the sufficient operating voltage and an event is generated. In the low battery condition, the view/edit setting is only allowed.

In the low battery mode, the backlight does not turn on.

The **LOW BATTERY** indication can be mapped to a binary output and can be used for the remote signaling.

NOTE

Siemens recommends replacing the battery when the **LOW BATTERY** indication is displayed.

In the low battery mode, the following relay operations lead to insufficient operating voltage. The LCD displays the **INSUFFICIENT ENERGY** message and the relay enters the sleep mode.

- Turning on the backlight
- Resetting the local flag
- Binary outputs
- LEDs

NOTE

In the low battery condition, when editing the settings, if the battery voltage falls below 1.5 V, the relay goes to the sleep mode and all the unsaved settings are discarded.

6.5   Operating Mode

The 7SR46 Argus relay has 4 operating modes:

- Local
- Remote
- Local or Remote
- Out of service

The following table identifies the functions operation in each mode. You can select the modes in the following methods:

SETTING MODE > **SYSTEM CONFIG** > **Operating Mode**, a binary input, or command through rear/front communication protocols.

Table 6-4   Operating Mode

Operation Control	Remote Mode	Local Mode	Out of Service Mode
USB/Rear ports set to REMOTE[3]	Enabled	Disabled	Disabled
USB/Rear ports set to LOCAL[3]	Disabled	Enabled	Disabled
USB/Rear ports set to LOCAL or REMOTE[3]	Enabled	Enabled	Disabled
Binary inputs	Enabled	Enabled	Enabled
Binary outputs	Enabled	Enabled	Disabled[4]
External trip input	Enabled	Enabled	Enabled
Reporting			
Spontaneous			
IEC60870-5-103	Enabled	Enabled	Disabled
General interrogation			
IEC60870-5-103	Enabled	Enabled	Disabled
MODBUS-RTU	Enabled	Enabled	Enabled
Change of settings			
USB/Rear ports set to REMOTE [3]	Enabled	Disabled	Enabled
USB/Rear ports set to LOCAL [3]	Disabled	Enabled	Enabled
USB/Rear ports set to LOCAL or REMOTE[3]	Enabled	Enabled	Enabled
Fascia	Enabled	Enabled	Enabled
Historical Information			
Event records	Enabled	Enabled	Enabled
Fault information	Enabled	Enabled	Enabled
Setting information	Enabled	Enabled	Enabled

The communication port modes can be selected at:
SETTING MODE > **COMMUNICATION**.

ℹ️ **NOTE**

The relay undergoes a restart whenever the operating mode is changed using binary input.

---

[3]   Each communication port has a setting to allow you to determine which port is used for local operation and which port is used for remote operation. If the port is set to Local or Remote, the port can be used for all operations and has no priority.

[4]   The binary output can be configured for Out of Service Mode via Reydisp Evolution. However, this will not affect the binary output status and it remains Disabled for Out of Service mode.

6.6 Online Operation using Reydisp

6.6.1 Reydisp Evolution Configuration Software

For more information about the Reydisp Evolution configuration software, visit the Siemens Internet site *www.siemens.com/reyrolle*.

Download **Reydisp Evolution Set up** and install Reydisp Evolution to access the **Help** menu.

Refer to 7SR46 Argus relay **Engineering Guide** (C53000-H7040-C103-1) for more information.

6.7 Indications

6.7.1 General

During operation, indications deliver information about operational states, that include:

- Measured data
- Device supervisions
- Device functions

Data records are stored in the non-volatile memory. The **Data Storage** menu contains the settings for clearing events and faults.

In addition, indications give an overview of important fault events after a failure in the system. All indications are furnished with a time stamp at the time of their occurrence. Indications are saved in logs inside the device and are available for later analyses. The following number of indications are saved as a minimum in the respective buffer:

- Event records – 100 indications
- Fault records – 10 indications

If the maximum capacity of the fault records log or of the event records log is exhausted, the oldest entries disappear before the newest entries. Indications can be output spontaneously via the communication interfaces of the device and through external request via general interrogation.

Menu Path	Log
Main menu → Fault Data mode	Fault log

To reach the desired log from the main menu, use the navigation keys of the on-site operation panel.

- Navigate inside the log using the navigation keys. You will find the most current indication at the top of the list.

Every indication contains date, time, and its state as additional information.

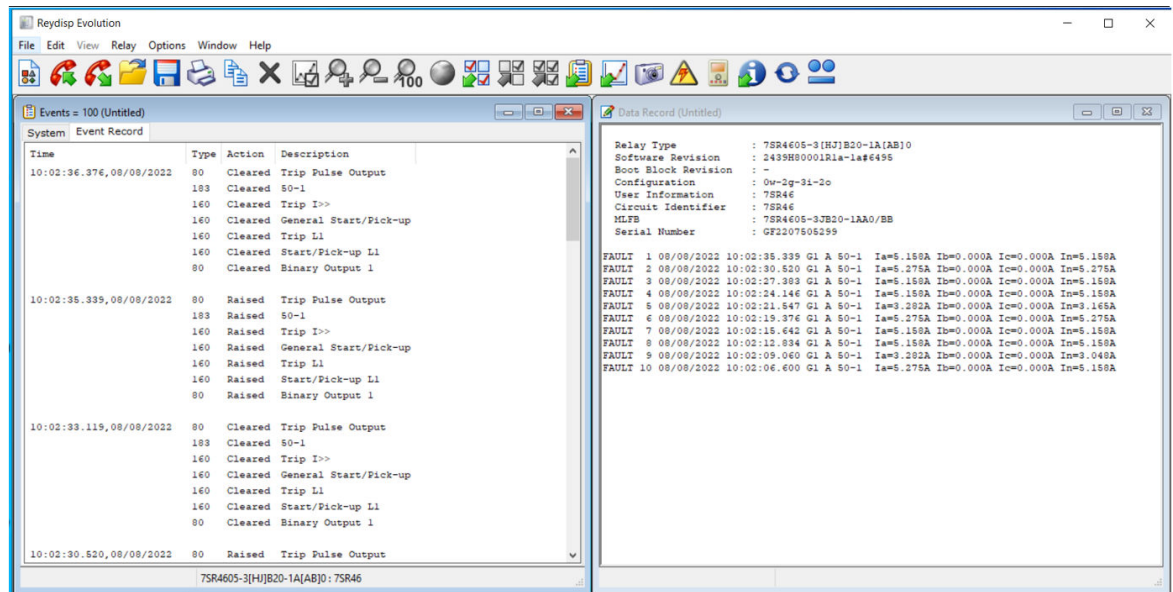**NOTE**

No password entry is necessary to read indications from the device.

6.7.2 Reading Indications from the PC with Reydisp Evolution

Menu Path	Log
Relay→ Events	Get Events
Relay→ Data Records	Get Data Fault Record

To read the indications with Reydisp Evolution, your PC must be connected via the USB user interface of the device.

[sc_events_faults, 1, --,--]

You will find additional information about deleting and saving logs in *6.8.2 Saving and Deleting the Logs*.

6.7.3 Displaying Indications

Displayed indications in Reydisp and on the on-site operation panel are supplemented with the following information:

Table 6-5   Overview of Additional Information

Indications in	Reydisp Information	Device Display Information
Log for operational indications	Time stamp (date and time), Function type, Function action, Function description	-
Log for fault indications	Entry number Time stamp (date & time) Settings group number Function name Current values	Entry number Time stamp (date & time) Settings group number Function name Current values

6.7.4 Resetting Stored Indications

Reset from Relay Fascia

Pressing the ► key (TEST/RESET key) activates all LEDs (LED test). When released, all stored indications, stored LEDs, output contacts, and fault displays are reset.

Reset via Binary Inputs

Reset by binary input `Rst LEDs & O/Ps` switches on all LEDs (LED Test). When the signal reverts, all stored indications, stored LEDs, output contacts, and fault indications are reset.

Reset with Reydisp Evolution

You can reset stored indications via Reydisp Evolution in online mode.

Reset via Communication Protocol

You can initiate acknowledgment of stored indications also via communication through a connected substation automation technology system. This occurs in conformance to standards (Modbus RTU, IEC 60870-5-103) or via configuration (mapping) of the LED Reset input signal for any protocol. Stored LEDs, output contacts, and spontaneous fault displays are reset.

6.8 Logs

6.8.1 Data Storage

The relay stores 2 types of data: Fault records, event records.

Data records are stored in the non-volatile memory. The **Data Storage** menu contains the settings for clearing events and faults.

Fault Records (Trip Log)

The fault records are generated when the protection function detects a fault condition and the trip alert message appears on the LCD. Up to 10 fault records can be stored and displayed on the fascia LCD.

The fault record provides a summary of the following relay status:

- Settings group

- Element that issued the trip

- Any phase/earth picked up

- Fault magnitude

- LED indications

- General alarm

- Date and time

The trip alert message is displayed until you acknowledge the fault.

The fault and event records provide the full sequence of events that results to a trip for analysis.

The fault records are stored in a rolling buffer with the oldest faults overwritten. The fault storage can be cleared with the **DATA STORAGE** > **Clear Faults** setting in HMI

Event Records (Event Log)

The event recorder feature allows the time tagging of any status change (Event) in the relay. When an event occurs, the actual event condition is logged as a record with a date and time stamp to a resolution of 1 ms. The relay can store a maximum of 100 event records. When the operational log is full, any new record overwrites the old records.

Stored events can be cleared by using the **DATA STORAGE** > **Clear Events** setting in HMI or from Reydisp Evolution.

The following events are logged:

- Status change of binary outputs

- Status change of binary inputs

- Change of settings

- Device startup and shutdown

- Protection element operation

- Critical or low battery

- General alarm

- Internal Relay Failure (IRF)

NOTE

Fault and Event records must be downloaded before uploading the device firmware.

6.8.2 Saving and Deleting the Logs

Deleting the logs of the device in the operating state is not required. If storage capacity is no longer sufficient for new indications, the oldest indications are automatically overwritten with new incoming events. For the memory to contain information about the new faults in the future, for example, after an inspection of the system, a deletion of the log makes sense. Resetting the logs is done separately for the various logs.

The fault record can be cleared with the **DATA STORAGE** > **Clear Faults** setting in the HMI.

The stored events can be cleared by using the **DATA STORAGE** > **Clear Events** setting in the HMI or from Reydisp.

NOTE

Before you delete the content of a log on your 7SR46 device, save the log with Reydisp Evolution on the hard disk drive of your PC.

NOTE

If the device executes an initial start, for example, after an update of the device software, the following logs are automatically deleted:

- Event log

- Fault log

Back up the deletable logs using Reydisp Evolution.

6.8.3 General Alarm

General alarms are the user-defined text messages displayed on the LCD when binary inputs are mapped and triggered.
Up to 3 general alarms of 16 characters can be configured, each triggered from one or more inputs. Each general alarm generates an event.
If multiple alarms are activated simultaneously, then the last alarm indication is displayed on the LCD.
All the fault triggers generated by general alarms are logged in to the fault data record.

Table 6-6   General Alarm

Parameters	Description	Range	Default Value	Min	Max	Step Change
General Alarm-n	General Alarm-n	16 char (0-9, A-Z, +, -, /, SPACE)	Alarm-n	–	–	–

6.9 Measured and Metered Values

6.9.1 Overview of Measured and Metered Values

The 7SR46 devices have numerous measured and metered values. The following *Table 6-7* gives you an overview of the scope and sequencing principle. Measured and metered values are referred to as measured values.

Table 6-7　　Overview of Measured Values

Measured/Metered Values	Description
Current Meters	• Phase currents I_a, I_b, I_c • Derived earth current I_n • 2nd harmonic currents I_a, I_b, I_c
Thermal Meter	• Thermal Capacity

6.9.2 Reading Measured Values and Metered Values

You can read measured and metered values on the device display or with Reydisp Evolution.

6.10 Change Device Settings

Date and Time Synchronization

> The integrated date and time synchronization of your 7SR46 device allows you to assign the precise time of events to an internally maintained device time. Events in the logs are stamped with the device time. You can also take local time zones and daylight-saving time arrangements into consideration.

Setting Time and Date

> You can set the date and time of your 7SR46 device using the relay fascia as well as Reydisp Evolution.

Settings on the Device Using the On-Site Operation Panel

> To reach the settings for date and time from the main menu, use the navigation keys on the on-site operation panel.
>
> **SETTING MODE** > **SYSTEM CONFIG** > **Date**
>
> **SETTING MODE** > **SYSTEM CONFIG** > **Time**

Setting Time Keeping Parameters

> Input the time keeping settings of your 7SR46 device using Reydisp Evolution. You have access here to all possible settings. You can only access some of the settings using the on-site operation panel while the device is being operated. You can synchronize the device time with the PC time via Reydisp Evolution.
>
> In Reydisp Evolution, select **Relay** > **Control** > **Set Time and Date**
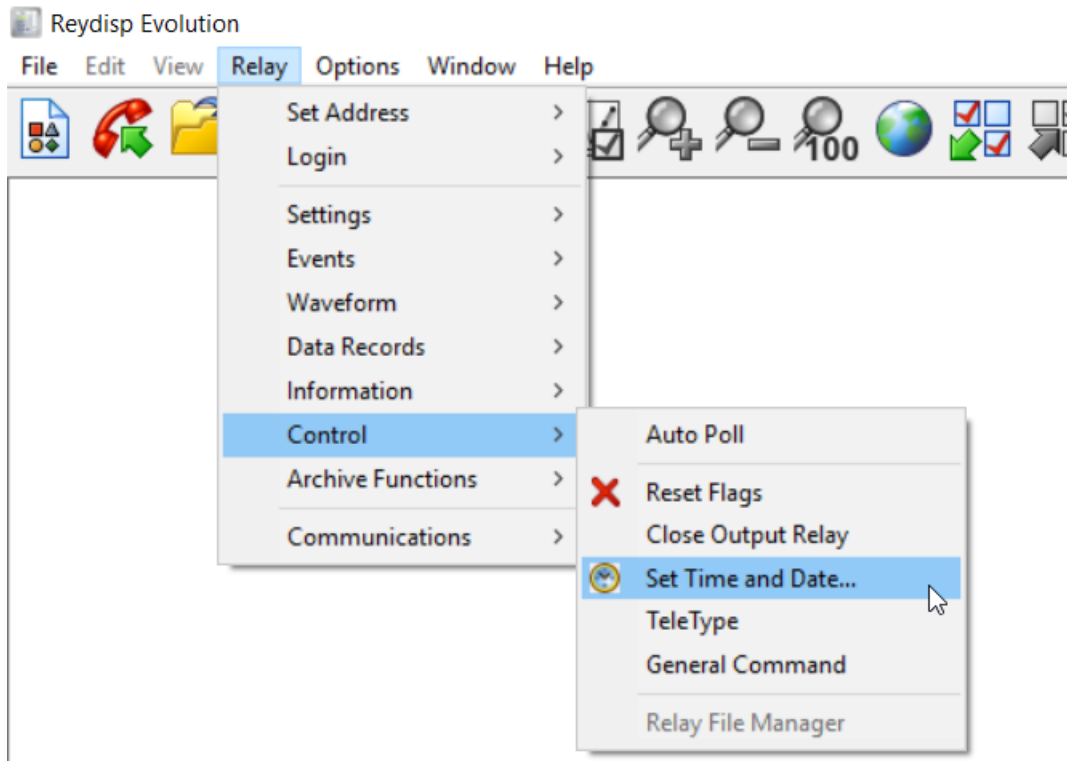
[sc_control_settime, 1, --_--]

Figure 6-1   Set Time and Date
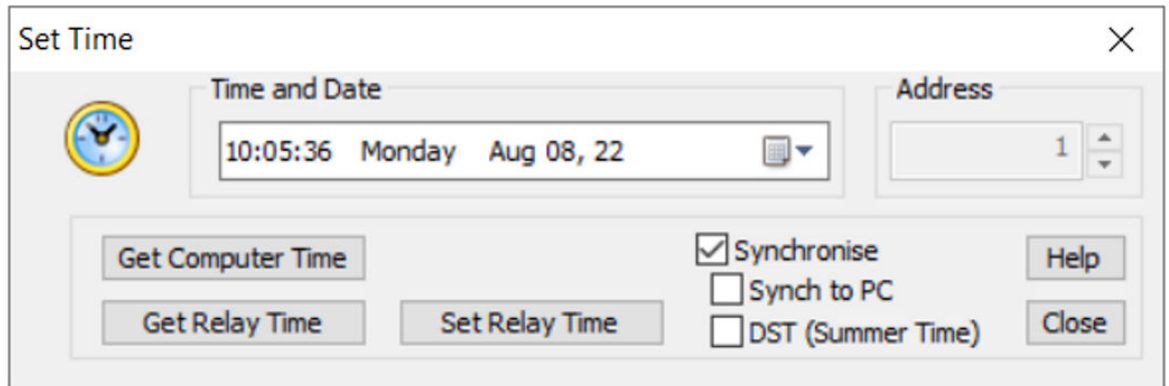
[sc_set_time, 1, --_--]

Figure 6-2   Set Time

NOTE

The date and time are maintained while the relay is energized by the battery. If the battery is de-energized, then RTC has to be set on every device power-up.

The date and time must be synchronized before device commissioning, after firmware update and after setting change.

6.11 Settings Group Selection

For different applications you can save the respective function settings in so-called Settings groups, and if necessary enable them quickly.

The relay provides 2 groups of settings – Group number (Gn) 1 to 2. At any time, only one group of settings can be active - **SYSTEM CONFIG** > **Active Group** setting. During operation, you can switch between settings groups. The source of the switchover can be selected via a parameter.

You can switchover the settings groups via the following alternatives:

- Via the relay fascia directly on the device
- Via an online Reydisp Evolution connection to the device
- Via binary inputs
- Via a communication connection to the substation automation technology

The communication protocols IEC 60870-5-103 and Modbus TCP can be used for switching the settings groups.

A settings group includes all switchable settings of the device. Except for a few exceptions (for example, general device settings such as rated frequency), all device settings can be switched.

NOTE

When the settings group or any setting parameters is changed, the relay restarts to apply the new settings and the protection is not active for the moment.

---

7 Commissioning

7.1 Overview

This section contains information about the commissioning of the 7SR46 device. Test functions in the device support you during testing, simplify testing processes, and reduce testing times.

The secondary test is used for checking:

- Correct setting of functions

- Routing of logical signals to the binary inputs and outputs

- Interfaces and many more

You can find the offline testing options during engineering in the Reydisp Evolution online help.

Commissioning Notes

The commissioning tests are carried out to prove the following:

- The relay is not damaged in transit

- The relay is correctly connected and installed

- The characteristics of the protection and settings which are based on calculations

- Settings are correctly applied

- Obtain a set of test results for future reference

7.2 Before Testing

7.2.1 Safety

> **NOTE**
>
> The commissioning and maintenance of the relay must be carried out by skilled personnel trained in protective relay maintenance and capable of observing all safety precautions and regulations appropriate to this type of relay and also the associated primary plant.

The following safety procedures must be followed

- The integrity of any protective conductor connection must be checked before carrying out any other actions.

- The relay ratings, operating instructions, and installation instructions must be checked before the commissioning or maintenance.

- Ensure that all test equipment and leads have been correctly maintained and are in good condition.

- Siemens recommends connecting all power supplies of the test equipment via a residual current relay (RCD) which must be located as close to the supply source as possible.

- The selection of test instrument and test leads must be appropriate to the application.

- The selection of an inappropriate range on a multi-range instrument could lead to a dangerous flashover. Therefore, fused instrument leads must be used when measurements of power sources are involved.

- The failure or blowing of an instrument fuse or the operation of an instrument cut-out could cause the secondary winding of the current transformer (CT) to become open circuit. Therefore, fused test leads must not be used where the measurement of a CT secondary current is involved

- Open circuit secondary windings on energized current transformers are a hazard that can produce high voltages that are dangerous to personnel and damaging to equipment. Thus, test procedures must be devised as to eliminate this risk.

7.2.2 Sequence of Tests

> **NOTE**
>
> When testing other relays at the same time, coordinate with such testing to avoid danger to personnel and equipment.

- When cabling and wiring are complete, carry out a comprehensive check of all terminations for required torque and compliance with the approved diagrams.

- This is followed by the insulation resistance tests, which if satisfactory allows the wiring to be energized by either the appropriate supply or test supplies.

- When primary injection tests are completed satisfactorily, all remaining systems can be functionally tested before the primary circuit is energized.

- Some circuits can require further tests before being energized.

- Protection relay testing requires access to the protection-system wiring diagrams, relay configuration information, and protection settings.

- The subsequent sequence of tests is based on the arrangement of the relay menu structure.

- A test log is based on the actual tests completed and must be recorded for each relay tested.

7.2.3 Test Equipment

The following test equipment is required:

- Secondary injection equipment with integral time interval meter

- Primary injection equipment

- A power source with rated voltage within the working range of the auxiliary-supply rating of the relay.

- A power source with rated voltage within the working range of the binary input rating of the relay.

- Other equipment as appropriate to the protection being commissioned. For more information, refer to the product-specific documentation.

The secondary injection equipment must be appropriate to the protection functions to be tested. Additional equipment for general tests and for testing the communication channel is:

- Laptop computer with appropriate interface equipment.

- Printer to operate from the laptop computer (optional).

7.2.4 Use of Laptop Computer to Facilitate Testing

The functions of Reydisp Evolution can be used during the commissioning tests to assist with test procedures or to provide documentation for recording the test and test parameters. One method is to clear the event records before each test is started, after the test upload from the relay, the settings, events file generated as a result of application of the test. These files can be saved to retain a comprehensive record of that test.

You can prepare the relay settings on the laptop computer (offline) or on the relay before the test. These settings must be saved for reference and compared with the settings at the end of testing. It enables checking of errors that are not introduced during testing and any temporary changes to settings to suit the test process are returned to the required service state.

A copy of the relay settings as a Rich Text Format (.rtf) file suitable for printing or for record purposes can be produced from Reydisp Evolution as follows:

- From the **File** menu, select **Save As**.

- Change the **File type** to **Export Default/ Actual Setting (.RTF)** and enter a suitable file name.

When testing is completed, the event records must be cleared and the settings file checked to ensure that the required in-service settings are being applied.

7.3   Applying Settings

The relay settings for the particular application must be applied before any secondary testing occurs. If relay settings are not available, then the relay with default settings can be used for precommissioning tests.

Note that the tripping and alarm contacts for any function must be programmed correctly before any scheme tests are carried out.

The relay features multiple settings groups. Only one of the settings groups is active at a time. In the applications where more than one settings group is to be used, it can be necessary to test the relay in more than one configuration.

When using the settings groups, it is not important for the relay to operate in the settings apart from the current display mode. The relay operates in the Active Settings Group and the visible edit/view settings group can be altered. This allows the settings in one group to be altered from the relay fascia while the protection continues to operate on a different unaffected group. The Active Settings Group and the Edit Settings Group are selected in the Menu.

If the relay is allowed to trip during testing, the instruments display is interrupted and replaced by the **Trip Alert** screen which displays the fault-data information.

After applying a setting change to the relay, which may involve a change to the indication and output contacts, press the ▶ (test/reset) key to ensure that any existing indication and output is correctly cleared.

7.4 Initial Startup

Establishing Readiness for Operation State

It is assumed that you have gone through steps in chapters 1 to 6. Check the connection of the auxiliary power supply. You can also read the rated voltage range from the name plate.

After successful testing of your voltage source, switch it ON. The device is now powered ON. The **HEALTHY** LED (Green) lights up. If the protective film is inserted between the battery and the battery clip, the **LOW BATTERY** LED (Amber) flashes. The following figure shows the basic status of the device display.

[sc_pressEnter_lcd, 1, en_US]
Figure 7-1 Status of Device Display

7.5 Precommissioning Tests

Secondary Tests

In the numerical relay test kits, select the appropriate burden (VA) for testing the relay functionalities.

The following settings must be configured on the relay during testing.

Parameters	Settings
System frequency	Set nominal frequency
CT CONFIG	Select CT type and set I_s value
FUNCTION CONFIG	Enable the protection to be tested
OUTPUT CONFIG	BO CONFIG → select (hand reset/self reset)
	LED CONFIG → select (hand reset/self reset)

> **NOTE**
>
> To reset the hand reset output contacts, assign the binary inputs to `Rst LED & O/Ps` and set the binary inputs pickup delay as 0.5 s for automated overcurrent and earth fault characteristics test modules.

Primary Tests

Primary injection is recommended to ensure the relay connections, CT polarity, and settings before implementing the protection scheme into service.

Isolate the auxiliary DC supplies for alarm and tripping from the relay and remove the trip and inter-trip links.

> **NOTE**
>
> Before carrying out any primary injection, it is important to ensure appropriate current transformers are shorted to avoid any maloperation of mesh corner or busbar type unit protection.

7.6   Testing Readiness for Operation

By carrying out the points in *7.4 Initial Startup*. The device is ready for operation. If devices are built into cabinets, additional wiring and communication connections are necessary.

Siemens recommends the following procedure in this order:

Testing Binary Inputs, Binary Outputs and External Trip Input

Check that the connection from the output of the testing equipment to the device is correct and the binary inputs, binary outputs and external trip input are connected correctly.

Testing Current Inputs

Using multi-phase test equipment, apply the corresponding test quantities and check the results.

Testing Protection Functions

The purpose of this test is to verify the correct setting of protection functions and the routing of signals. To do this, you can feed the test signals with test equipment. Digital test equipment offers you multiple test programs and test sequences.

Output Test

The relay fascia displays the output test feature and allows you to operate the relays functions. The output test of the selected function automatically operates the binary output assigned to that function. The output test displays any enabled protection function in the setting menu.

Trip Pulse Test

The Trip Pulse Output Test feature, located under the Maintenance Menu, enables the pulse output and remote flag output to be operated using USB power.

8 Device Maintenance

8.1 Execute Checks

General

    ✧   Make sure that the **HEALTHY** LED (Green) on the front fascia lights up. This is how the device indicates that it is properly functioning and that no failures have been observed during self-monitoring.

    ✧   Make sure that the LEDs on the front fascia present a plausible image of the actual state of the device. For example, after the tripping of a protection function, the device has fault indications (if configured) and a fault record for this purpose.

    ✧   Press the LED test key. All LEDs must light up. Stored LED displays are reset and only those states currently indicated by the device are shown.

    ✧   Read the operational measured values and compare them to the actual measurands to control the analog inputs. To do this, enter a reference quantity into the device using secondary test equipment. This is how you check the proper operation of the analog section of devices.

    ✧   Read the operational indications. You can do this directly on the device or following a clearly arranged procedure using Reydisp Evolution. Make sure that they do not contain inputs about failures of the device, of measurands or other implausible information. If the protection equipment has picked up or disabled an error, you can verify this through the fault record and the fault log. This is how the protection equipment demonstrates its correct operation in the operating state. Additional protection-function tests can be omitted.

8.2 Self-Monitoring

The 7SR46 Argus relay is built in with several self-monitoring features. The self-monitoring is performed periodically when the relay boots up. The supervision includes monitoring of power supply signals, code execution watchdog, memory checks by checksum, RTC check, and battery health checks. The **Healthy** LED is illuminated when the internal power supply signals are healthy.

Internal Relay Failure (IRF)

The internal relay failure feature monitors the healthiness of the relay and supervises the following scenarios in the presence of auxiliary power/CT power and generates an IRF event.

- **Unexpected (Watchdog) error**

  If there is an unexpected behavior of the relay, IRF condition is signaled and the relay restarts.

  If this error is observed frequently, send the relay to the factory.

- **Internal supply voltage error**

  The relay monitors the internal supply voltage and if there is an error, the IRF condition is signaled.

  The protection functions are blocked during this condition.

- **Card error**

  In case of I/O card failure, the error message is displayed and the IRF condition is signaled.

  The relay performance is not guaranteed, send the relay to the factory.

- **MLFB error**

  If the device information data is not correct during the startup, the error message is displayed and the IRF condition is signaled, send the relay to the factory.

- **Calibration error**

  The relay checks for the integrity of the calibration data during the startup and displays a message in case of an error. The IRF condition is signaled.

  You can acknowledge the error message via HMI only, the default calibration data is applied to the relay and the IRF condition is cleared.

  The relay is functional only when the calibration error message is acknowledged. In this case, the relay performance is not guaranteed, send the relay to the factory for calibration.

- **Setting error**

  The relay checks for the integrity of the settings during the startup and displays a message if there is an error and the IRF condition is signaled.

  You can acknowledge the error message via HMI only, the default settings are applied to the relay and the IRF condition is cleared.

  The relay is functional only when the setting error message is acknowledged.

The following table displays the error messages and the error codes in the **Instrument Mode**.

Table 8-1 IRF

Errors	Error Code	Error Message
Setting error	00000001	Load default settings!
Calibration error	00000010	Load default calibration!
MLFB error	00000100	MLFB Information Error!
Card error	00001000	Analog & IO Card Error!
Internal supply voltage error	00010000	–
Unexpected error	00100000	–

NOTE

If the device is faulty due to a **Card error** and/or **MLFB error**, it must be returned via the standard Siemens returns process. Contact your regional office.

NOTE

Internal supply voltage error and card error is seen on device HMI only when user applies CT power or auxiliary power supply.

NOTE

If a binary output is assigned to IRF, Siemens recommends not to use the same binary output for any other protection function configuration.

If a binary output is assigned to IRF, and if there is an internal relay failure, then the binary output is reset.

8.3 General Information

No special maintenance is required for 7SR46 devices. The only maintenance measure is to replace the battery.

Since the device is mainly self-monitoring, hardware and software errors are automatically forwarded. This action minimizes any downtime of the device. It also eliminates the need for frequent maintenance inspections.

8.4 Troubleshooting

This section provides the common problems of 7SR46 Argus relay and the recommended solution to resolve the problem.

Observations	Action
Relays will not communicate in a ring network	• Check that all relays are powered up with auxiliary power supply. • Check that all relays have unique addresses. • In self-powered mode, check CT input current above $1.62 \cdot I_{smin}$ (1-phase) or $0.6 \cdot I_{smin}$ (3-phase).
Relay Does Not Power Up	• Check whether correct auxiliary AC or DC voltage is applied, and the polarity is correct. • Check whether phase connections are based on the terminal diagram and if CT power is applied. • Check the USB port if the relay is connected with USB power • Check the battery healthy voltage if the relay is powered with battery power.
Relay Does Not Accept The Password	• The password entered is wrong. Enter the correct password. • If correct password is forgotten, note down the numeric code displayed at the **Change Password** screen. • To retrieve the password, communicate this numeric code to a Siemens customer care representative.
HEALTHY LED OFF/LCD Not Displaying	• In the absence of auxiliary voltage, check the minimum phase currents. • Check the error messages and the error codes under IRF in the **INSTRUMENT MODE**.
Binary Inputs Do Not Work	• Check that the correct BI voltage is applied, and that the polarity is correct. • Check that the binary input settings such as the pick-up and drop-off timers and the status inversion function are correctly set.
External trip (ET) input does not work	• Check whether the device is working on CT power or aux power and ensure that the device is operating in healthy condition. • Short the ET terminals with a resistance wire and ensure that the line wire resistance is less than or equal to 20 Ω.
Low/Critical Battery Indication	• Check whether paper strip between battery clip and battery is removed. • Check whether battery is connected to the correct polarity. • Check the battery healthy voltage.

Additional Support

If these measures do not lead to the desired result, the support team will help you. Please contact the local Siemens office or contact customer support:

• Phone: +49 911 2155 4466

• Web: *www.siemens.com/reyrolle*

• Email: energy.automation@siemens.com

• Customer support: *www.siemens.com/csc*

NOTE

- Keep the device serial number at hand for the support team

- Read out the version of the installed firmware.

- Read the device-related log (settings files, fault records, event records, IRF statuses) of 7SR46 device with Reydisp Evolution so that the support employee has all the necessary information.

8.5 Replace and Return Defective Device

8.5.1 Backup Device

If you cannot correct a defect reported by the device, you can replace this device with a backup device. If the error is on the device, only the device is replaced.

8.5.2 Replacing a Device

✧   Take the device out of operation.

✧   Remove the wired terminal blocks from the module to be exchanged or alternatively all lines from the device.

✧   Remove the device.

Installing a Replacement Device

✧   If needed, assemble the replacement device.

✧   Put the device back into operation.

8.5.3 Returning a Device

✧   Make sure that the device has protective covering to avoid any transportation damage.

NOTE

When returning the device ensure the protective film is inserted between the battery and the battery clip.

✧   Pack the complete device.

✧   In order to return the device to the Siemens factory or any Siemens location, contact the customer support center and follow the instructions specified by them.

NOTE

If the device is incomplete, for example if terminals are missing, it cannot be taken back.

8.6 Firmware Update

In the 7SR46 Argus relay, firmware can be updated by performing the following procedure:

How to proceed

✧ Connect the relay to a local PC using a USB cable.
Ensure only 1 device is connected using USB cable for firmware upload at a time.

NOTE

Do not disconnect the USB when the firmware update is in progress. If the firmware update is terminated intermittently, the existing firmware corrupts in the relay and the relay stops working.

The following alert appears when the firmware is updated and when the 7SR46 Argus Relay is loaded with 2439H80001V1.0x firmware.

✧ From the Reydisp Evolution software, download the **Settings**, **Fault Records** and **Event Records** from the connected 7SR46 relay.

Get Settings

✧ To retrieved the settings from the device, navigate **Relay → Settings → Get Settings** command or by clicking the icon **Get Settings**.

[sc_reydispevoluiton_getsettings, 1, --_--]

✧ Select the required **Settings Group (Group 1 or Group 2)**.
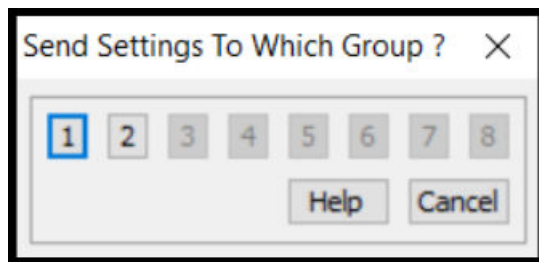
[sc_sendsettingstowhichgroup, 1, --_--]

Figure 8-1 Setting Group Selection

✧ Save the settings file (RSF2 extension).

To Download Fault Records

✧ Click **Get Data Fault Record** and save the fault data file (TXT extension).

[sc_7sr45_reydisp_faultrecords_icon, 1, --_--]
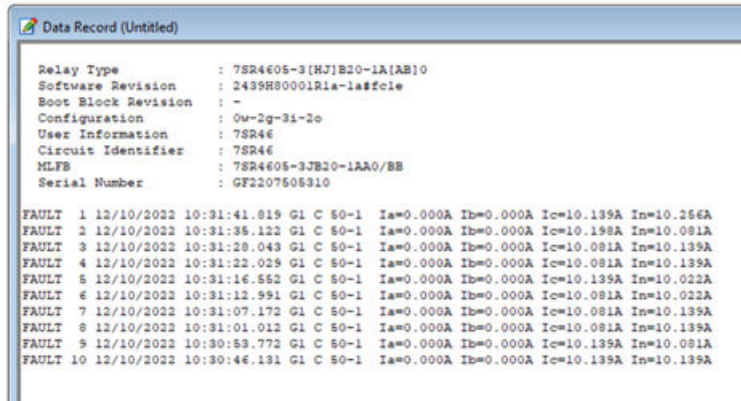
[sc_7sr46_reydisp_faultrecords, 1, --_--]

Figure 8-2   Relay Fault Record

To Download Events Records

✧   Click **Get Events** and save the event record file (TXT extension).

[sc_7sr45_reydisp_eventsrecords_icon, 1, --_--]
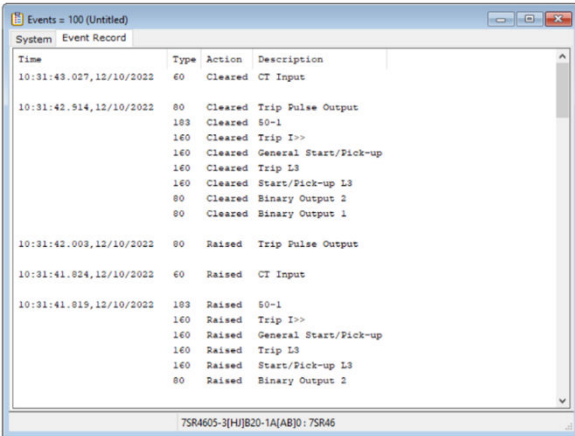
[sc_7sr46_reydisp_eventsrecords, 1, --_--]

Figure 8-3   Relay Event Record

Download New Firmware

✧   Download the new firmware and default settings template file from the following SIOS internet page for
      loading onto the 7SR46 relay.
      *https://support.industry.siemens.com/cs/document/109814302/reyrolle-7sr46-dual-powered-overcurrent-
      protection?dti=0&lc=en-WW*

— Open the downloaded firmware file and proceed with firmware upgrade wizard.
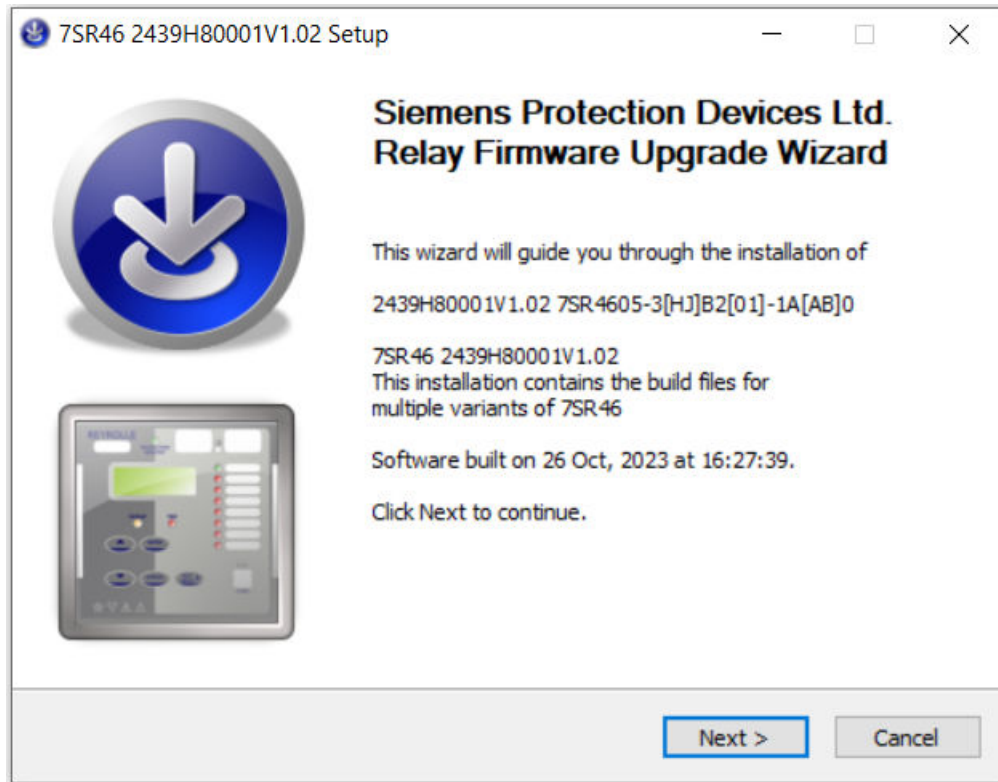
[sc_7sr46_reydisp_fw_s1, 1, --_--]
Figure 8-4   Firmware Upgrade Wizard

— The license page is displayed, select **I accept the terms of the License Agreement** and then click **Next**.
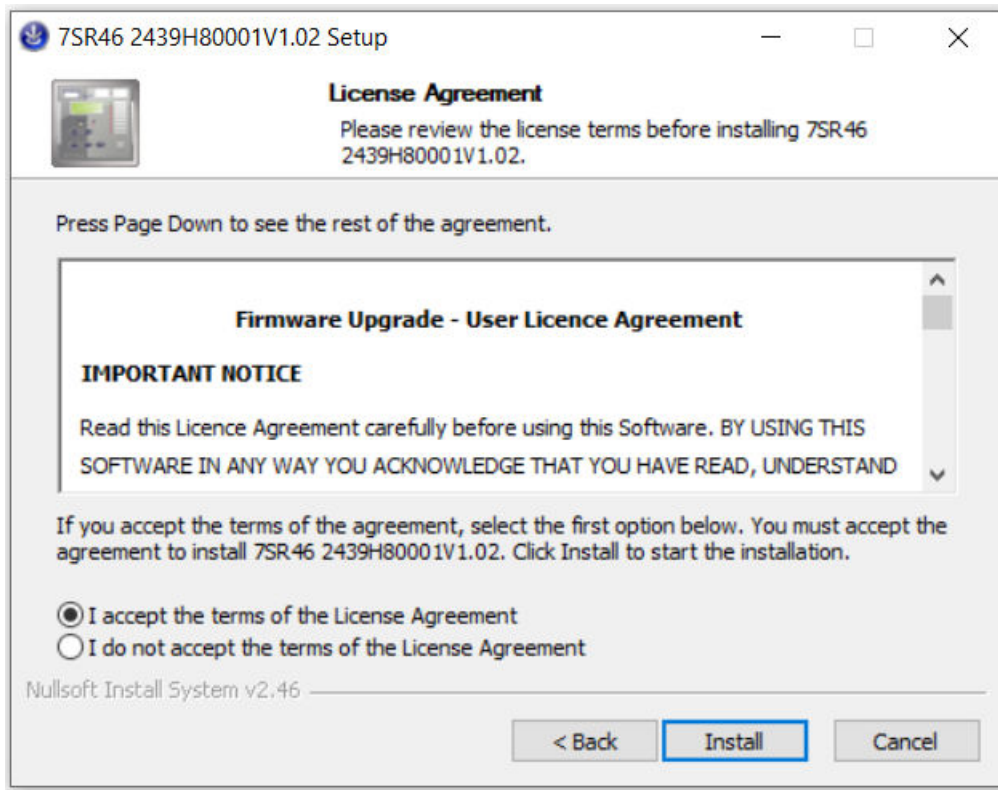
[sc_7sr46_reydisp_fw_s2, 1, --_--]

Figure 8-5   License Agreement

— The process takes several minutes to complete and then the relay automatically restarts.
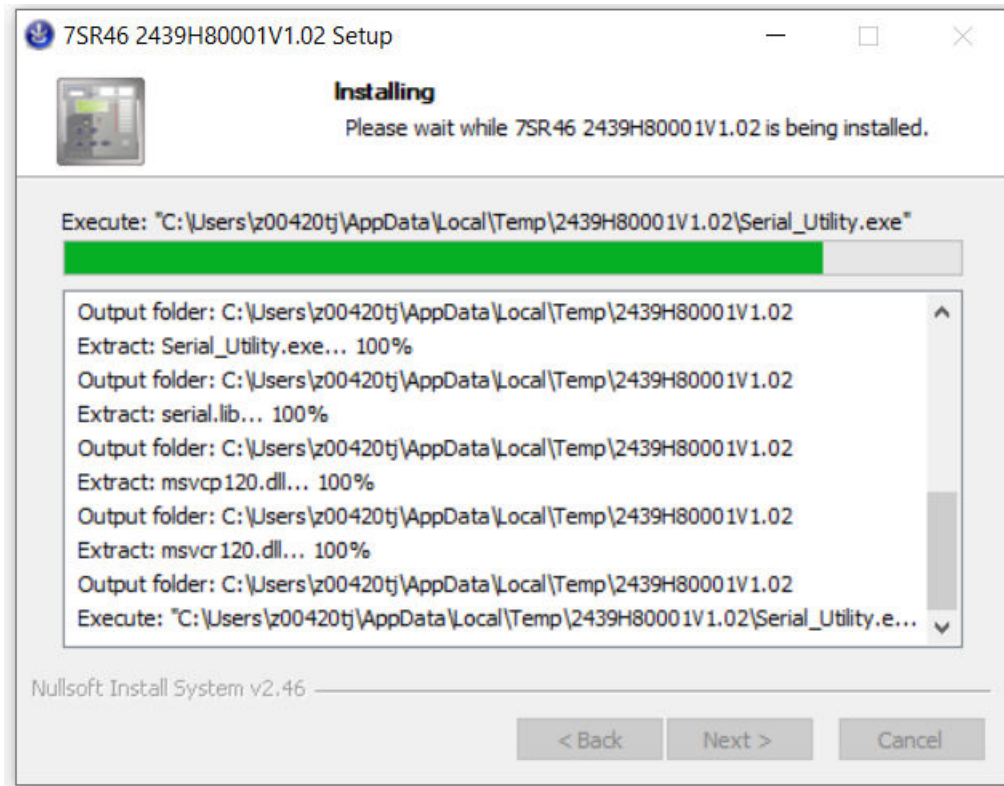
[sc_7sr46_reydisp_fw_s3, 1, --_--]

Figure 8-6   Updating Firmware Window

— Once the firmware installation is successful, click **Finish** to close the firmware uploading.
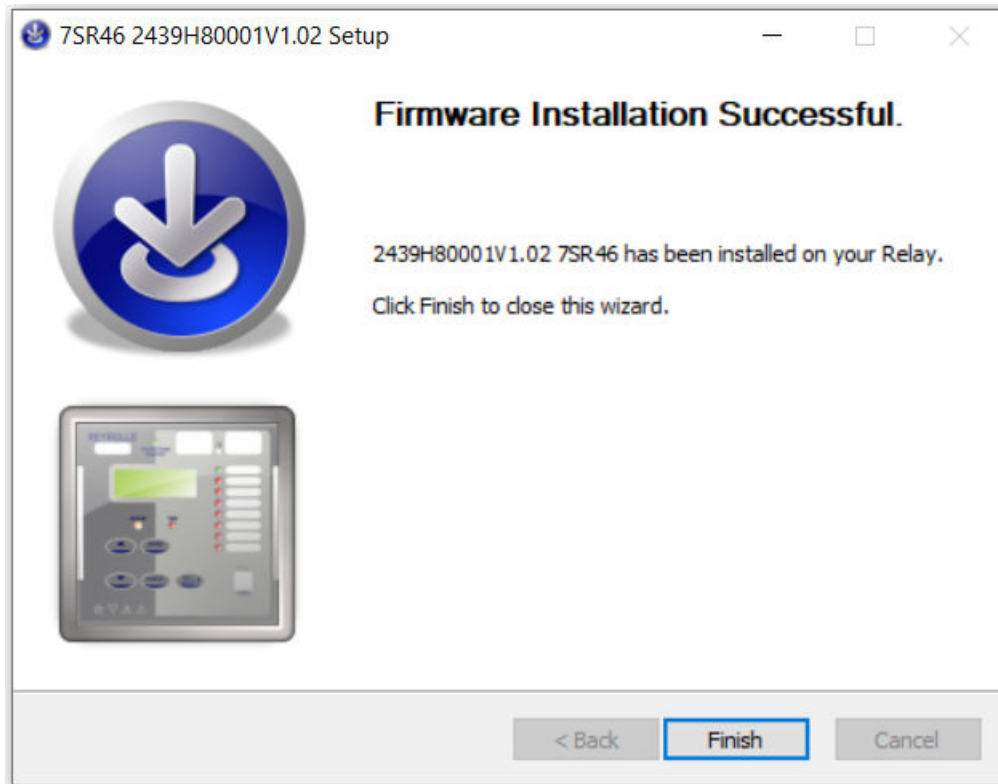
[sc_7sr46_reydisp_fw_s4, 1, --_--]

Figure 8-7   Firmware Installation Successful

✦   After downloading the settings file from the preceeding step, you can revise the settings using the following 2 methods:

Online Method

✦   Open the settings files saved (RSF2 extension) and click **Send All Settings**.

[sc_reydispevolution_sendallsettings, 1, --_--]

✦   If there are differences in the settings saved from step above and the newly uploaded firmware, the dialog **Setting Differences** appears.
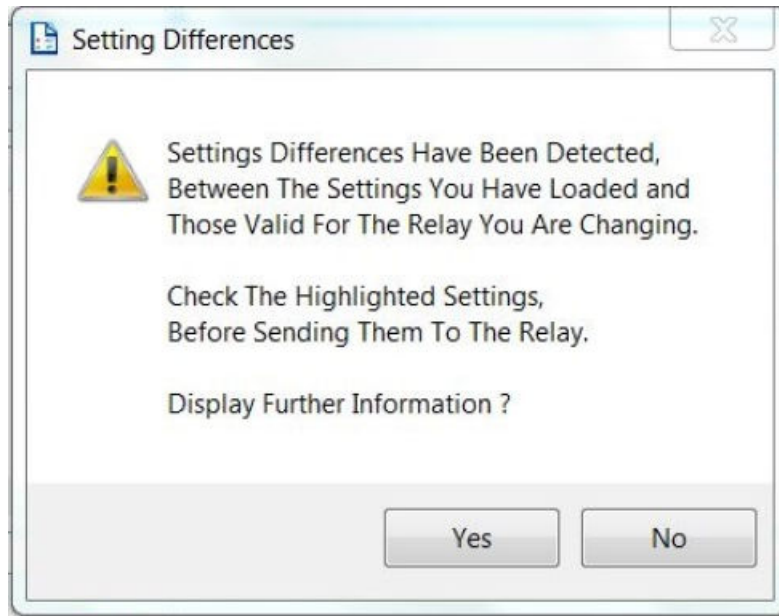
[sc_7sr45_reydisp_settingdifferences, 1, –_–]

Figure 8-8   Firmware – Setting Diffferences

✧   Click **Yes** to display the help for the settings difference. Click **No** to skip this step. After upgrading the template, verify the newly configured settings which appears in red color.
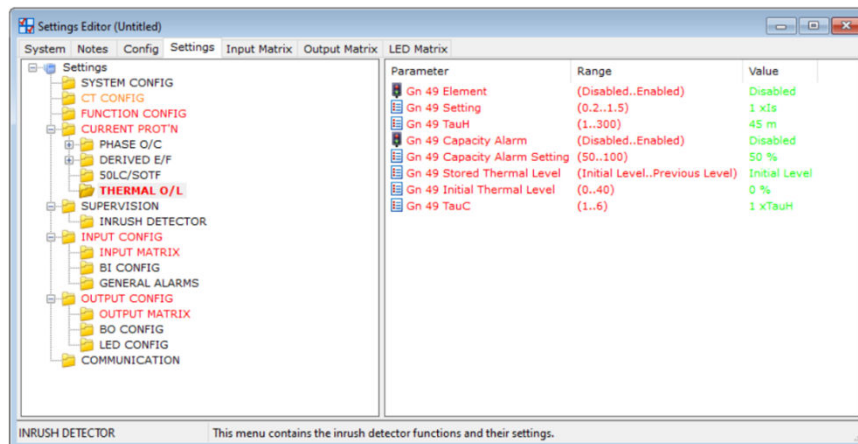
[sc_7sr46_reydisp_spv_onsetdiff, 1, –_–]

Figure 8-9   7SR46 Relay Settings Difference

✧   Once the new settings are configured, upload the settings to the 7SR46 relay by clicking the **Send All Settings**.

Offline Method

✧   After downloading the settings file from the SIOS internet page, select the **File → Open**.
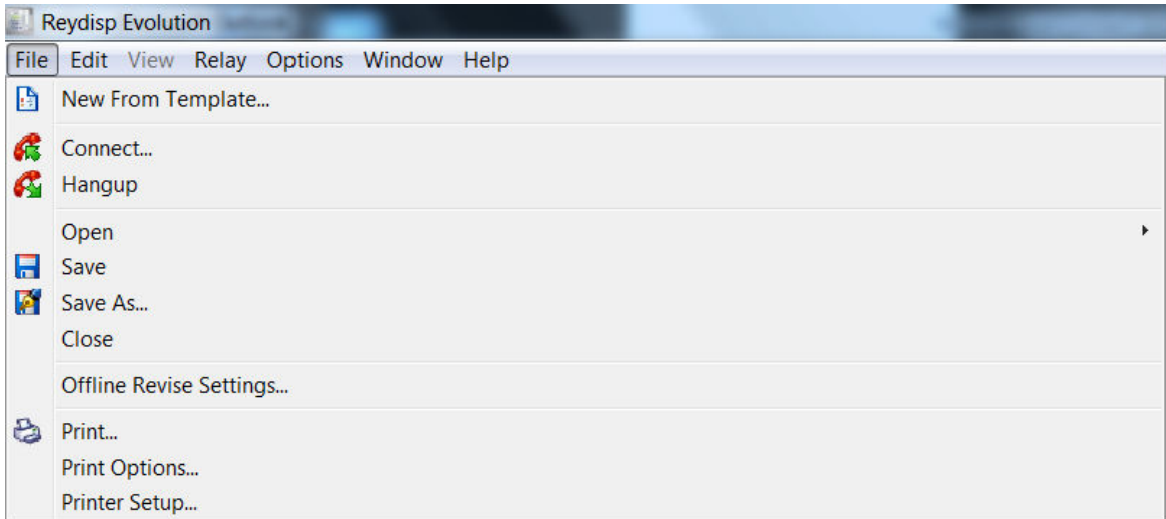
[sc_7sr45_reydisp_offrevsett, 1, --_--]

✧ Select the desired 7SR46 Relay settings template (which was shared on the portal) to upgrade which contains the default settings.

✧ Configure the appropriate settings and upload the settings to the 7SR46 relay by clicking the **Send All Settings**.

NOTE

The incompatibility of the device and firmware displays an error message **MLFB INFORMATION ERROR**.

The following table shows the compatibility of 7SR4605 device and firmware.

Software Version	Hardware Version
2439H80001V1.02	7SR4605/CC and 7SR4605/BB
2439H80001V1.01	7SR4605/BB
2439H80001V1.00	7SR4605/BB

NOTE

Fault and event records must be downloaded or backup the settings, before uploading the device firmware.

NOTE

The date and time in the device must be synchronized after firmware update is complete.

NOTE

Current must not be injected into the device during firmware update.

✧ If the function settings are defaulted, then erase the **Fault Records** and **Events Records** after the firmware update.

9 Security Settings

9.1 Confirmation ID (Password Feature)

The relay incorporates the confirmation ID for settings.

A confirmation ID (shown as Password in the device LCD display) serves to prevent users from carrying out critical operations inadvertently. By entering the confirmation ID for settings, the chances of performing operations inadvertently with potentially failure-inducing effects are reduced.

The programmable confirmation ID feature enables the user to enter a 4-character alphanumeric code to perform setting changes in the relay. The confirmation ID in factory supplied relay is set to **NONE**, that is, the confirmation ID feature is disabled. The confirmation ID must be entered twice as a measure against accidental changes. Once a confirmation ID is entered, then it is required thereafter to change the settings. Confirmation IDs can be deactivated by using the confirmation ID to gain access and by setting the confirmation ID to **NONE**. To deactivate the confirmation ID feature, enter the confirmation ID twice.

As soon as the you attempt to change a setting or initiate control,the confirmation ID is requested before any changes are allowed. Once the confirmation ID has been validated, the user is not prompted for the confirmation ID for the next 1 hour. If no more changes are made within 1 hour, then the confirmation ID prompts are automatically activated.

The confirmation ID prevents from unauthorized changes to settings from the front fascia or over the data communication channels.

The confirmation ID validation screen also displays a numerical code. If the confirmation ID is lost or forgotten, you can communicate this code to the Siemens customer support representatives and the confirmation ID can be retrieved.

The 7SR46 Argus relay allows you to set the confirmation ID via **SETTING MODE** > **SYSTEM CONFIG** > **Password**. The length of the confirmation ID must be 4 characters.

NOTE

Only alphanumeric and 3 special characters such as +, −, and / are allowed.

The confirmation ID can be disabled by configuring it as **NONE**.

From the parameter view screen, you can enter the confirmation ID and press **ENTER** for validation. If the entered confirmation ID is valid, the next screen appears. If the confirmation ID is invalid, LCD displays the confirmation ID retry screen again.

After the successful log on and editing of parameter, the confirmation ID prompt screen does not appear until the log on expires.

If you do not perform any operations for more than 1 min, the login expires and unsaved settings are discarded.

A Appendix

A.1   Revision History

Firmware Revision History

2023/11	2439H80001V1.02	Software Maintenance
2023/03	2439H80001V1.01	Thermal overload protection function (49) added
2022/11	2439H80001V1.00	First Release

Hardware Revision History

2023/11	7SR4605/CC	Push-in type spring connectors and new CT connector added
2022/11	7SR4605/BB	First Release

Firmware Hardware Compatibility

Software Version	Hardware Version
2439H80001V1.02	7SR4605/CC and 7SR4605/BB
2439H80001V1.01	7SR4605/BB
2439H80001V1.00	7SR4605/BB

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