Modicon

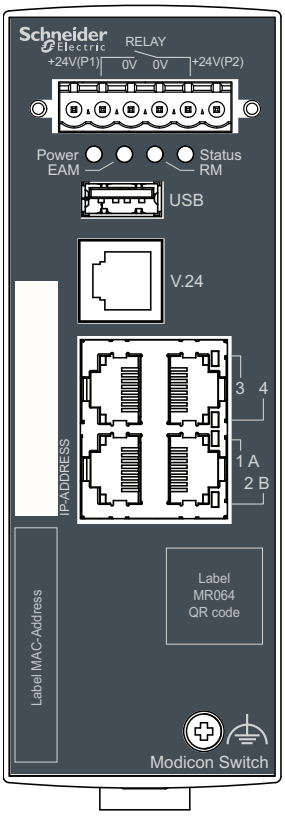
MCSESR Redundancy Switch

Installation Manual

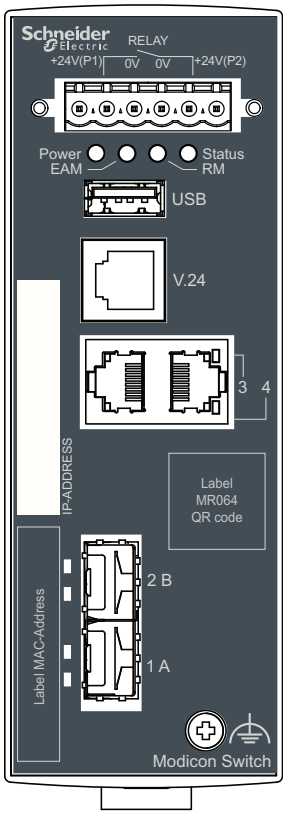
(Original Language)

EIO0000004961.00

11/2024



MCSESR043F23F0
MCSESR043F23F0C



MCSESR043F2LM0
MCSESR043F2LM0C

Schneider Electric

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Legal Information

The information provided in this document contains general descriptions, technical characteristics and/or recommendations related to products/solutions.

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Table of Contents

Safety Information

Important Information

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result** in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

Please Note

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

Before You Begin

Do not use this product on machinery lacking effective point-of-operation guarding. Lack of effective point-of-operation guarding on a machine can result in serious injury to the operator of that machine.

⚠ WARNING

UNGUARDED EQUIPMENT

- Do not use this software and related automation equipment on equipment which does not have point-of-operation protection.
- Do not reach into machinery during operation.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

This automation equipment and related software is used to control a variety of industrial processes. The type or model of automation equipment suitable for each application will vary depending on factors such as the control function required, degree of protection required, production methods, unusual conditions, government regulations, etc. In some applications, more than one processor may be required, as when backup redundancy is needed.

Only you, the user, machine builder or system integrator can be aware of all the conditions and factors present during setup, operation, and maintenance of the machine and, therefore, can determine the automation equipment and the related safeties and interlocks which can be properly used. When selecting automation and control equipment and related software for a particular application, you should refer to the applicable local and national standards and regulations. The National Safety Council's Accident Prevention Manual (nationally recognized in the United States of America) also provides much useful information.

In some applications, such as packaging machinery, additional operator protection such as point-of-operation guarding must be provided. This is necessary if the operator's hands and other parts of the body are free to enter the pinch points or other hazardous areas and serious injury can occur. Software products alone cannot protect an operator from injury. For this reason the software cannot be substituted for or take the place of point-of-operation protection.

Ensure that appropriate safeties and mechanical/electrical interlocks related to point-of-operation protection have been installed and are operational before placing the equipment into service. All interlocks and safeties related to point-of operation protection must be coordinated with the related automation equipment and software programming.

NOTE: Coordination of safeties and mechanical/electrical interlocks for point of-operation protection is outside the scope of the Function Block Library, System User Guide, or other implementation referenced in this documentation.

Start-up and Test

Before using electrical control and automation equipment for regular operation after installation, the system should be given a start-up test by qualified personnel to verify correct operation of the equipment. It is important that arrangements for such a check are made and that enough time is allowed to perform complete and satisfactory testing.

⚠ WARNING

EQUIPMENT OPERATION HAZARD

- Verify that all installation and set up procedures have been completed.
- Before operational tests are performed, remove all blocks or other temporary holding means used for shipment from all component devices.
- Remove tools, meters, and debris from equipment.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Follow all start-up tests recommended in the equipment documentation. Store all equipment documentation for future references.

Software testing must be done in both simulated and real environments.

Verify that the completed system is free from all short circuits and temporary grounds that are not installed according to local regulations (according to the National Electrical Code in the U.S.A, for instance). If high-potential voltage testing is necessary, follow recommendations in equipment documentation to prevent accidental equipment damage.

Before energizing equipment:

- Remove tools, meters, and debris from equipment.
- Close the equipment enclosure door.
- Remove all temporary grounds from incoming power lines.
- Perform all start-up tests recommended by the manufacturer.

Operation and Adjustments

The following precautions are from the NEMA Standards Publication ICS 7.1 - 1995:
(In case of divergence or contradiction between any translation and the English original, the original text in the English language will prevail.)

- Regardless of the care exercised in the design and manufacture of equipment or in the selection and ratings of components, there are hazards that can be encountered if such equipment is improperly operated.
- It is sometimes possible to misadjust the equipment and thus produce unsatisfactory or unsafe operation. Always use the manufacturer's instructions as a guide for functional adjustments. Personnel who have access to these adjustments should be familiar with the equipment manufacturer's instructions and the machinery used with the electrical equipment.
- Only those operational adjustments required by the operator should be accessible to the operator. Access to other controls should be restricted to prevent unauthorized changes in operating characteristics.

Qualification of Personnel

Only appropriately trained persons who are familiar with and understand the contents of this manual and all other pertinent product documentation are authorized to work on and with this product.

The qualified person must be able to detect possible hazards that may arise from parameterization, modifying parameter values and generally from mechanical, electrical, or electronic equipment. The qualified person must be familiar with the standards, provisions, and regulations for the prevention of industrial accidents, which they must observe when designing and implementing the system.

Intended Use

The products described or affected by this document, together with software, accessories, and options, are programmable logic controllers (referred to herein as "logic controllers"), intended for industrial use according to the instructions, directions, examples, and safety information contained in the present document and other supporting documentation.

The product may only be used in compliance with all applicable safety regulations and directives, the specified requirements, and the technical data.

Prior to using the product, you must perform a risk assessment in view of the planned application. Based on the results, the appropriate safety-related measures must be implemented.

Since the product is used as a component in an overall machine or process, you must ensure the safety of persons by means of the design of this overall system.

Operate the product only with the specified cables and accessories. Use only genuine accessories and spare parts.

Any use other than the use explicitly permitted is prohibited and can result in unanticipated hazards.

About the Book

Document Scope

The installation guide provides a device description, safety instructions, and the other information that you need to install the device.

Validity Note

The characteristics of the products described in this document are intended to match the characteristics that are available on www.se.com. As part of our corporate strategy for constant improvement, we may revise the content over time to enhance clarity and accuracy. If you see a difference between the characteristics in this document and the characteristics on www.se.com, consider www.se.com to contain the latest information.

Related Documents

Document title	Reference
Modicon MCSESR Managed Switch Installation Guide	EIO0000004961 (English)
Modicon MCSESR Managed Switch Configuration Guide	EIO0000005410 (English)
Modicon MCSESR Managed Switch GUI Reference Guide	EIO0000005411 (English)

Product Related Information

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Disconnect all power from all equipment including connected devices prior to removing any covers or doors, or installing or removing any accessories, hardware, cables, or wires except under the specific conditions specified in the appropriate hardware guide for this equipment.
- Always use a properly rated voltage sensing device to confirm the power is off where and when indicated.
- Replace and secure all covers, accessories, hardware, cables, and wires and confirm that a proper ground connection exists before applying power to the equipment.
- Use only the specified voltage when operating this equipment and any associated products.

Failure to follow these instructions will result in death or serious injury.

DANGER

POTENTIAL FOR EXPLOSION

Install and use this equipment in non-hazardous locations only.

Failure to follow these instructions will result in death or serious injury.

WARNING

LOSS OF CONTROL

- Perform a Failure Mode and Effects Analysis (FMEA), or equivalent risk analysis, of your application, and apply preventive and detective controls before implementation.
- Provide a fall back state for undesired control events or sequences.
- Provide separate or redundant control paths wherever required.
- Supply appropriate parameters, particularly for limits.
- Review the implications of transmission delays and take actions to mitigate them.
- Review the implications of communication link interruptions and take actions to mitigate them.
- Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and error conditions) according to your risk assessment, and applicable codes and regulations.
- Apply local accident prevention and safety regulations and guidelines.[1]
- Test each implementation of a system for proper operation before placing it into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

[1] For additional information, refer to NEMA ICS 1.1 (latest edition), Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control and to NEMA ICS 7.1 (latest edition), Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems or their equivalent governing your particular location.

WARNING

UNINTENDED EQUIPMENT OPERATION

- Only use software approved by Schneider Electric for use with this equipment.
- Update your application program every time you change the physical hardware configuration.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Trademarks

QR Code is a registered trademark of DENSO WAVE INCORPORATED in Japan and other countries.

Terminology Derived from Standards

The technical terms, terminology, symbols and the corresponding descriptions in the information contained herein, or that appear in or on the products themselves, are generally derived from the terms or definitions of international standards.

In the area of functional safety systems, drives and general automation, this may include, but is not limited to, terms such as *safety, safety function, safe state, fault, fault reset, malfunction, failure, error, error message, dangerous*, etc.

Among others, these standards include:

Standard	Description
IEC 61131-2:2007	Programmable controllers, part 2: Equipment requirements and tests.
ISO 13849-1:2023	Safety of machinery: Safety related parts of control systems. General principles for design.
EN 61496-1:2020	Safety of machinery: Electro-sensitive protective equipment. Part 1: General requirements and tests.
ISO 12100:2010	Safety of machinery - General principles for design - Risk assessment and risk reduction
EN 60204-1:2006	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
ISO 14119:2013	Safety of machinery - Interlocking devices associated with guards - Principles for design and selection
ISO 13850:2015	Safety of machinery - Emergency stop - Principles for design
IEC 62061:2021	Safety of machinery - Functional safety of safety-related electrical, electronic, and electronic programmable control systems
IEC 61508-1:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: General requirements.
IEC 61508-2:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: Requirements for electrical/electronic/programmable electronic safety-related systems.
IEC 61508-3:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: Software requirements.
IEC 61784-3:2021	Industrial communication networks - Profiles - Part 3: Functional safety fieldbuses - General rules and profile definitions.
2006/42/EC	Machinery Directive
2014/30/EU	Electromagnetic Compatibility Directive
2014/35/EU	Low Voltage Directive

In addition, terms used in the present document may tangentially be used as they are derived from other standards such as:

Standard	Description
IEC 60034 series	Rotating electrical machines
IEC 61800 series	Adjustable speed electrical power drive systems
IEC 61158 series	Digital data communications for measurement and control – Fieldbus for use in industrial control systems

Finally, the term zone of operation may be used in conjunction with the description of specific hazards, and is defined as it is for a *hazard zone* or *danger zone* in the *Machinery Directive (2006/42/EC)* and *ISO 12100:2010.*

NOTE: The aforementioned standards may or may not apply to the specific products cited in the present documentation. For more information concerning the individual standards applicable to the products described herein, see the characteristics tables for those product references.

Information on Non-Inclusive or Insensitive Terminology

As a responsible, inclusive company, Schneider Electric is constantly updating its communications and products that contain non-inclusive or insensitive terminology. However, despite these efforts, our content may still contain terms that are deemed inappropriate by some customers.

Description

Overview

The device is designed for the special requirements of industrial automation. The device meets the relevant industry standards, provides very high operational reliability, even under extreme conditions, and also long-term reliability and flexibility.

The device works without a fan.

The device is mounted by latching in place on a DIN rail.

You have the option of choosing various media to connect to the end devices and other network components:

- Multimode optical fiber
- Single mode optical fiber
- Twisted pair cable

The redundancy concept allows the network to be reconfigured quickly.

There are options for managing the device. Manage your devices through:

- Web browser
- SSH
- Telnet
- Ethernet Switch Configurator (ESC) (software for putting the device into operation)
- V.24 interface (locally on the device)

Product References

This table provides the overview of the MCSESR modules:

Reference	Description	Temperature range
MCSESR043F23F0	4 × 10/100 TX	0 °C ... +60 °C (+32 °F ... +140 °F)
MCSESR043F2LM0	2 × 10/100 TX + 2 × 100 SFP	0 °C ... +60 °C (+32 °F ... +140 °F)
MCSESR043F23F0C	4 × 10/100 TX	Conformal coating -40 °C ... +60 °C (-40 °F ... +140 °F)
MCSESR043F2LM0C	2 × 10/100 TX + 2 × 100 SFP	Conformal coating -40 °C ... +60 °C (-40 °F ... +140 °F)

SFP Transceivers

This table provides the overview of the SFP transceiver:

Reference	Description	Temperature range
MCSEAAF1LFU00	Fiber optic module, SFP 100BASE-SX/LC, multi-mode	0 °C ...+60 °C (+32 °F ...+140 °F)
MCSEAAF1LFS00	Fiber optic module, SFP 100BASE-LX/LC, single-mode	0 °C ...+60 °C (+32 °F ...+140 °F)
The SFP port(s), if used, need an SFP transceiver(s) (see below). In this case, the temperature range is that of the SFP transceiver.		

Memory Backup Adapter

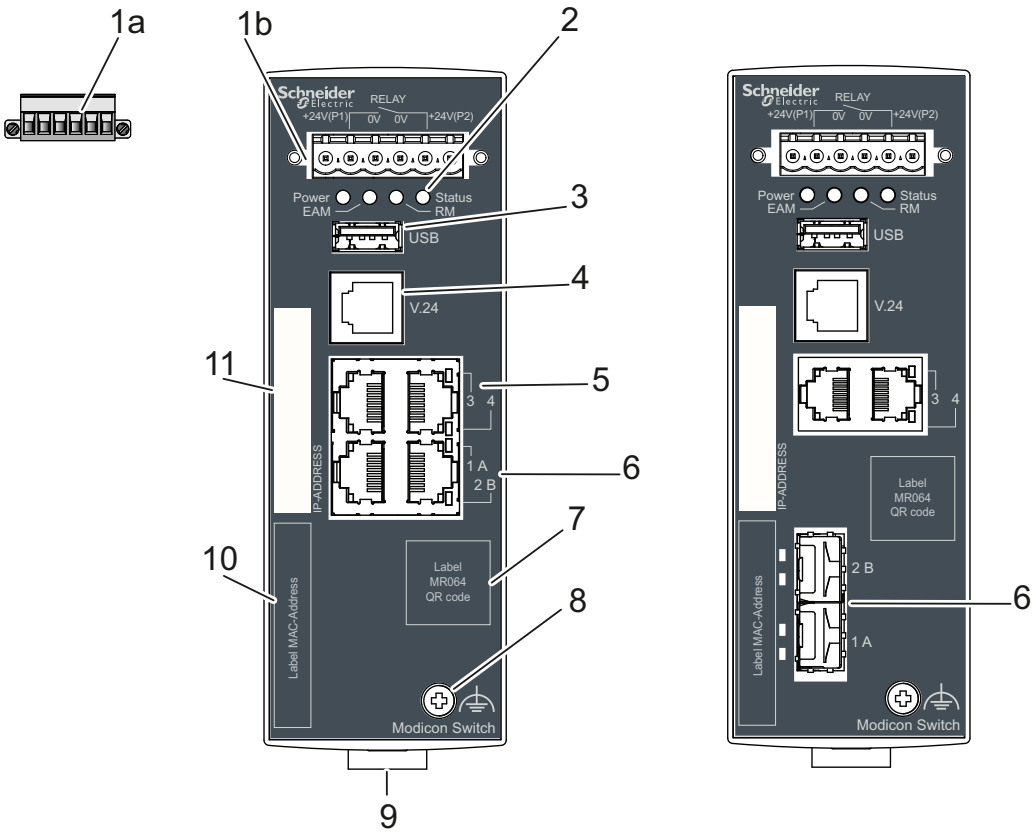
Reference	Description
TCSEAM0100	EAM (memory backup adapter)

Standards and Certifications

Click the link that corresponds to your preferred language to download standards and certifications (PDF format) that apply to the modules in this product line:

Title	Languages
Modicon M580, M340, and X80 I/O Platforms, Standards, and Certifications	EIO0000002726 (EN)
	EIO0000002727 (FR)
	EIO0000002728 (DE)
	EIO0000002730 (IT)
	EIO0000002729 (ES)
	EIO0000002731 (ZH)

MCSESR Presentation



NOTE: These images represent the front view of the switches. On the left, MCSESR043F23F0 is shown. On the right, MCSESR043F2LM0 is shown.

Legend:

Marker	Description
1a	Six-pin terminal block with a screw lock for the redundant power supply (or supplies) and signal contact
1b	Terminal block connection
2	LED display elements for device status
3	USB port
4	V.24 interface
5	2 x RJ45 socket for 10/100 Mbit/s twisted pair connections
6	Uplink ports
	2 x SFP slot for 100 Mbit/s fiber optic connections
	2 x RJ45 socket for 10/100 Mbit/s twisted pair connections
7	Label and QR code
8	Grounding screw
9	Locking gate for removing the device
10	Product name and MAC address of device (label)
11	Label area for IP address of device

Power Supply

A six-pin, screw lock terminal block is available for the redundant supply to the device.

Ethernet Ports

10/100 Mbit/s Twisted Pair Ethernet Port

The 10/100 Mbit/s twisted pair port allows you to connect network components according to the IEEE 802.3 10BASE-T/100BASE-TX standard.

This port supports:

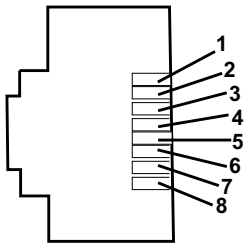
- Auto-crossover (if autonegotiation is activated)
- Autonegotiation
- Auto polarity
- 10 Mbit/s half-duplex mode, 10 Mbit/s full duplex mode
- 100 Mbit/s half-duplex mode, 100 Mbit/s full duplex mode

Delivery state: Autonegotiation activated

The port casing is electrically connected to the front panel.

The pin assignment corresponds to MDI-X.

This table provides pin assignment, 10/100 Mbit/s twisted pair port, RJ45 socket, MDI-X mode:

Figure	Pin	Function
	1	RD+ Receive path
	2	RD- Receive path
	3	TD+ Transmission path
	6	TD- Transmission path
	4, 5, 7, 8	–

100 Mbit/s Fiber Optic Port

The 100 Mbit/s fiber optic port allows you to connect network components according to the IEEE 802.3 100BASE-FX standard.

This port supports full or half duplex mode. The default setting is full duplex.

The fiber optic ports require the use of the SFP transceiver.

Display Elements

After the power supply (or supplies) is in an energized state, the software starts and initializes the device. Afterwards, the device performs a self-test. During this process, various LEDs illuminate.

Device Status

These LEDs provide information about conditions that affect the operation of the device.

LED	Function	Color	State	Indication
Power	Power supply (or supplies) voltage	—	OFF	Supply voltage is too low.
		Yellow	Steady on	Modules with redundant power supply (or supplies): Supply voltage 1 or 2 is on.
			Four flashes	Software update is running. Maintain the power supply (or supplies).
		Green	Steady on	Modules with redundant power supply (or supplies): Supply voltage 1 and 2 are on.
				Modules with single power supply (or supplies): Supply voltage is on.
EAM	EAM memory adapter (USB port)	—	OFF	EAM memory adapter not connected.
		Green	Steady on	EAM memory adapter connected.
			Three flashes	Device writes to/reads from the memory adapter.
		Yellow	Steady on	EAM memory adapter inoperative.
RM	Redundancy manager	—	OFF	No redundancy configured.
		Green	Steady on	Redundancy exists.
			One flash	Device is reporting an incorrect configuration of the RM function.
Status	Device status	—	OFF	Device is starting and/or is not ready for operation.
		Green	Steady on	Device is ready for operation. Characteristics can be configured.
		Red	Steady on	Device has detected at least one error in the monitoring results.
			One flash	The boot parameters used when the device started differ from the boot parameters saved. Start the device again.
			Four flashes	Device detected multiple IP addresses.

Port Status

The following LEDs are embedded on the ports:

Function	Color	State	Indication
Link status	—	OFF	Device detects an invalid or missing link.
	Green	Steady on	Device detects a valid link.
		One flash	Port is in standby mode.
		Three flashes	Port is off.
	Yellow	Steady on	Device detects an unsupported SFP transceiver or an unsupported data rate.
		Flashing	Device is transmitting and/or receiving data.
		One flash	Device detects at least one unauthorized MAC address.

Management Interfaces

V.24 Interface (External Management)

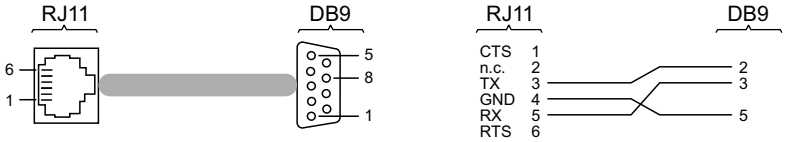
The V.24 interface is a serial interface for the local connection of an external network management station (VT100 terminal or PC with terminal emulation). The interface allows you to set up a data connection to the Command Line Interface (CLI) and to the system monitor.

The V.24 interface is an RJ11 socket.

VT100 terminal settings	Values
Speed	9600 Baud
Data	8 bit
Stopbit	1 bit
Handshake	off
Parity	none

The socket housing is electrically connected to the front panel of the device.

The following image displays the pin assignment of the V.24 interface and the DB9 connector:



NOTE: The terminal cable is available as an accessory.

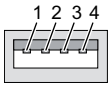
USB Interface

The USB interface allows you to connect the memory adapter (TCSEAM0100). This memory adapter is used for saving/ loading the configuration and diagnostic functions and for loading the software.

The USB interface has the following properties:

- Supports the USB master mode.
- Supports USB 2.0 (data rate maximum: 12 Mbit/s).
- Connector: Type A
- Supplies current of maximum 512 mA.
- Voltage not potential-separated

This table describes the pin assignment of the USB interface.Signal Contact

Figure	Pin	Function
	1	VCC (VBus)
	2	- Data
	3	+ Data
	4	Ground (GND)

Signal Contact

The signal contact is a potential-free relay contact.

The device allows you to perform remote diagnosis using the signal contact. In the process, the device signals events such as a line interruption. When an event occurs, the device opens the relay contact and interrupts the closed circuit. The management setting specifies which events switch a contact. You can also use the management to switch the signal contact manually and consequently control external devices. For more information, refer to “Connecting the Power Supply and the Signal Contact Lines” on page 23.

Important Installation Information

Installation Site Requirements

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Verify that there is at least 10 cm (3.94 in) of space above and below the device.
- Verify that there is at least 2 cm (0.8 in) of space on the right and left sides of the device.
- Install the device in a fire enclosure according to IEC 60950-1.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Strain Relief

If the strain relief is insufficient, there is a potential risk of torsion, contact issues and creeping interruptions It is good practice to:

- Relieve the connection points of cables and lines from mechanical stress.
- Design strain reliefs in such a way that they help prevent any mechanical damage to cables, wires or conductors caused by external influences or their own weight.
- To help prevent damage to device connections, connectors and cables, follow the instructions for proper installation in accordance with DIN VDE 0100-520:2013-06, sections 522.6, 522.7 and 522.13.

Wiring Guidelines

These rules must be applied when wiring an MCSESR.

Before connecting the electrical wires, verify that he following listed requirements are complied with.

The following requirements apply for wires:

- The electrical wires are voltage-free.
- The cables used are permitted for the temperature range of the application case.

Only use power supply (or supplies) cables that are suitable for ambient air temperatures of at least General requirements for connecting electrical wires 80 °C (+167 °F). Only use copper wire.

The following requirements apply for signal contact:

- The switched voltage complies with the requirements for a safety extra-low voltage (SELV) according to IEC 60950-1 or ES1 according to IEC/EN 62368-1.
- The connected voltage is limited by a current limitation device or a fuse. Observe the electrical threshold values for the signal contact.

Refer to “Technical Data” on page 26.

The following table describes the requirements for connecting the supply voltage:

The following requirements can be alternatively complied with:	
Alternative 1	The power supply (or supplies) complies with the requirements for a limited power source (LPS) according to IEC 60950-1 or ES1 + PS2.
Alternative 2	Relevant for North America: The power supply (or supplies) complies with the requirements according to NEC Class 2.
Alternative 3	The power supply (or supplies) complies with the following requirements: ● Safety extra-low voltage (SELV) according to IEC 60950-1 or ES1 according to IEC/EN 62368-1. ● If power supply primary is DC voltage, a fuse suitable for DC voltage must be located on the plus conductor of the power supply (or supplies). Regarding the properties of this fuse, refer to “Technical Data” on page 26. ● If power supply primary is AC voltage, a fuse must be located on the phase conductor of the power supply (or supplies). The power source must be electrically isolated from the ground potential. Regarding the properties of this fuse, refer to“Technical Data” on page 26.
● The supply voltage must correspond to the voltage specified on the type plate of the device. ● The power supply (or supplies) must conform to over voltage category I or II. ● The power supply (or supplies) must have an accessible disconnecting device (for example a switch or a plug). This disconnecting device must be clearly identified so it is clear which disconnecting device belongs to which power supply (or supplies) cable. ● The wire diameter of the power supply (or supplies) cable must be at least 0.75 mm² (North America: AWG18) on the supply voltage input. ● The cross-section of the ground conductor must be the same size as or larger than the cross-section of the power supply (or supplies) cable.	

Supply Voltage

The supply voltage is connected to the device casing through protective elements.

Device Casing

Only technicians authorized by the manufacturer are permitted to open the casing.

- Never insert pointed objects (narrow screwdrivers, wires, etc.) into the device or into the connection terminals for electric conductors. Do not touch the connection terminals.
- Keep the ventilation slits free to maintain good air circulation.
- Mount the device in the vertical position.

Grounding the Device

Grounding the device is by means of a separate ground connection on the device.

- Ground the device before connecting any other cables.
- Disconnect the ground only after disconnecting all other cables.

The overall shield of a connected shielded twisted pair cable is connected to the grounding connector on the front panel as a conductor.

LED or Laser Components

LED or LASER components according to IEC 60825-1:

CLASS 1 LASER PRODUCT

CLASS 1 LED PRODUCT

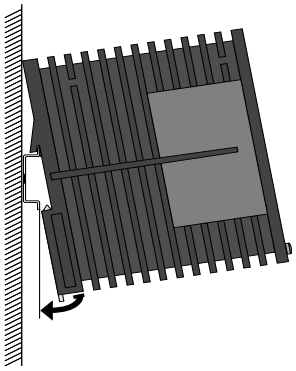
Recycling Note

After usage, this device must be disposed of properly as electronic waste, in accordance with the existing disposal regulations of your county, state, and country.

Installation

Overview

The device is ready for installation out of the box; it can be used in harsh, industrial environments.



Perform the following steps to install and configure the device:

- “Verifying the Package Contents” on page 20
- “Installing an SFP Transceiver (optional)” on page 21
- “Connecting the Power Supply and the Signal Contact Lines” on page 21
- “Operating the Device” on page 22
- “Connecting Data Cables” on page 22
- “Filling Out the Inscription Label” on page 22
- “First Settings” on page 23

Verifying the Package Contents

Perform the following steps after opening the product box:

- Verify whether the package includes all items named in the “Scope of delivery” on page 29.
- Verify the individual parts for transport damage.

Installing the Device onto the DIN Rail

Verify that the device maintains the minimum clearance to meet the environmental conditions during operation:

Minimum required clearance at the top and bottom of the ventilation slots	**Standard temperature range**
10 cm (3.94 in)	0 °C ... +60 °C (+32 °F ... +140 °F)
5 cm (2 in)	0 °C ... +57 °C (+32 °F ... +135 °F)
2 cm (0.8 in)	0 °C ... +55 °C (+32 °F ... +131 °F)

Minimum required clearance on the left and right device sides	**Standard temperature range**
2 cm (0.8 in)	0 °C ... +60 °C (+32 °F ... +140 °F)
0 cm (0 in)	0 °C ... +55 °C (+32 °F ... +131 °F)

To mount the device onto a horizontally mounted 35 mm DIN rail according to DIN EN 60715, proceed as follows:

1. Slide the upper snap-in guide of the device onto the DIN rail.
2. Press the module downwards onto the clip-in bar.
3. Snap in the device.

Grounding the Device

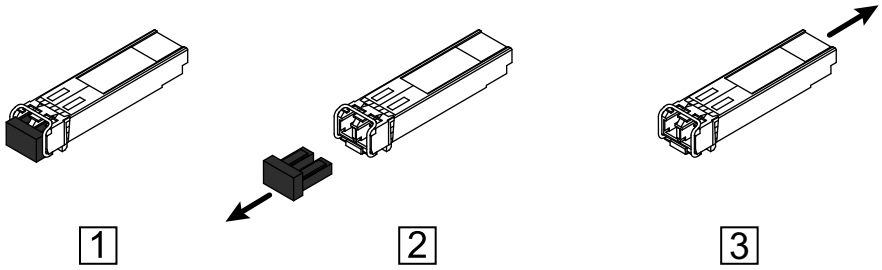
The device has a functional ground earth connection. Ground the device using the grounding screw supplied.

Installing an SFP Transceiver (optional)

The SFP transceivers are hot-swappable.

Use Schneider Electric SFP transceivers only. Refer to “Technical Data” on page 26.

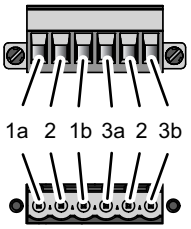
The following figure describes how to install SFP transceivers:



1. Remove the SFP transceiver from the packaging.
2. Remove the protection cap from the SFP transceiver.
3. Push the SFP transceiver with the lock closed into the slot until it latches.

Connecting the Power Supply and the Signal Contact Lines

This table describes the pin assignment: 6-pin, screw lock terminal block (on the top)

Figure	Pin	Function
	1a	24 V supply voltage connection 1
	1b	0 V supply voltage connection 1
	2	Connection for the voltage-free signal contact (for contact characteristics, see “Technical Data” on page 26)
	3a	0 V supply voltage connection 2
	3b	24 V supply voltage connection 2

Supply voltage

The supply voltage is connected to the device casing through protective elements. You have the option of supplying the voltage redundantly, without load distribution.

Both inputs are coupled with the supply connections through bridge rectifiers. With redundant power supply, the power supply (or supplies) unit with the higher output voltage supplies the device on its own.

With a non-redundant supply voltage, the device detects the interruption of a supply voltage. You can prevent this message by applying the supply voltage through both inputs, or by changing the configuration in the management.

DANGER

ELECTRIC SHOCK

- Do not insert pointed objects (narrow screwdrivers, wires, etc.) into the device or into the connection terminals for electric conductors.
- Do not touch the connection terminals.
- Before connecting the electrical wires, verify that the wiring guidelines listed are fulfilled.

Failure to follow these instructions will result in death or serious injury.

Refer to the “Wiring Guidelines” on page 17.

This table describes the type and specification of the supply voltage and pin assignment on the device.1.

Type of current	Specification of the supply voltage	Pin assignment on the device
DC voltage	Rated voltage range 12 V DC ... 48 V DC Voltage range including maximum tolerances 9.6 V DC ... 60 V DC	24 V plus terminal of the supply voltage
		0 V minus terminal of the supply voltage
AC voltage	Rated voltage 24 V AC Voltage range including maximum tolerances 18 V ... 30 V	24 V phase conductor
		Neutral conductor

1. Remove the terminal connector from the device.
2. Connect the wires according to the pin assignment on the device with the clamps.
3. Fasten the wires in the terminal block by tightening the terminal screws. The torque for the connection is 0.5 Nm (44 lb-in).

Signal contact (optional)

1. Connect the wires according to the pin assignment on the device with the clamps.
2. Fasten the wires in the terminal block by tightening the terminal screws. The torque for the screw connectors is 0.5 Nm (4.4 lb-in).

Operating the Device

The torque for tightening the supply voltage terminal block on the device is 0.51 Nm (4.5 lb-in).

- Mount the terminal block for the supply voltage and the signal contact using screws
- Enable the supply voltage.

⚠⚠ DANGER

ELECTRIC SHOCK

Only connect a supply voltage that corresponds to the specifications of your device.

Failure to follow these instructions will result in death or serious injury.

Connecting Data Cables

For data cable connections in environments with high electrical interference levels:

- Keep the length of the data cables as short as possible.
- Use optical data cables for the data transmission between the buildings.
- When using copper cables, provide a sufficient separation between the power supply (or supplies) cables and the data cables. Ideally, install the cables in separate cable channels.
- Verify that power supply (or supplies) cables and data cables do not run in parallel over longer distances. To reduce inductive coupling, verify that the power supply (or supplies) cables and data cables cross at a 90 ° angle.
- Connect the data cables according to your requirements.

For further information, refer to “Ethernet Ports” on page 14.

Filling Out the Inscription Label

To help you identify your device, write the IP address in the information field of the inscription label and apply to the label area.

First Settings

Configuring two or more devices with the same IP address can cause unintended operation of your network.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Install and maintain a process that assigns a unique IP address to every device in the network.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Do not change cable positions if DHCP is enabled.
- Read and understand the user manual before servicing.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Verify that the IP parameters are entered when the device is installed for the first time. The device provides the following options for configuring IP addresses:

- Input from the V.24 interface
- Configuration through BOOTP
- Configuration via DHCP (Option 82)
- Configuration through Memory Backup Adapter (EAM)

Default settings

- IP address: The device searches for the IP address using DHCP.
- Management password:
  - user, password: public (read only)
  - admin password: private (read/write)
- V.24 data rate: 9600 Baud
- Ethernet ports: link status is not evaluated (signal contact)
- Optical ports: Full duplex
- TP ports: Autonegotiation
- RSTP (rapid spanning tree protocol) activated

First Login (Password Change)

Perform the following steps:

1. Open the Graphical User Interface (GUI) or the Command Line Interface (CLI) the first time you log into the device.
2. Log into the device with the default password (private). The device prompts you to type in a new password.
3. Type your new password.

NOTE: Choose a password that contains at least eight characters, which include uppercase characters, lowercase characters, numerical digits, and special characters.

- When you log into the device with the Command Line Interface, the device prompts you to confirm your new password.
- Log into the device again with your new password.

NOTE: If you forget your password, contact your Schneider Electric service representative.

Ambient Air Temperature

Operate the device below the specified maximum ambient air temperature. Refer to “Technical Data” on page 26.

The ambient air temperature is the temperature of the air at a distance of 5 cm (2 in) from the device. It can vary depending on the installation conditions of the device, for example the distance from other devices or other objects, and the output of neighboring devices.

The temperature displayed in the Command Line Interface (CLI) and the GUI is the internal temperature of the device. It is higher than the ambient air temperature. The maximum internal temperature of the device named in the technical data is a guideline that indicates that the maximum ambient air temperature has possibly been exceeded.

Maintenance and Service

- Operate this device according to the “Technical Data” on page 24.
- Relays are subject to natural wear, which depends on the frequency of the switching operations. Verify the resistance of the closed relay contacts and the switching function depending on the frequency of the switching operations.
- Verify regularly for updated versions of the software. Find information and software available to download at www.se.com.
- Regularly verify the ventilation slots on the device for any obstructions.

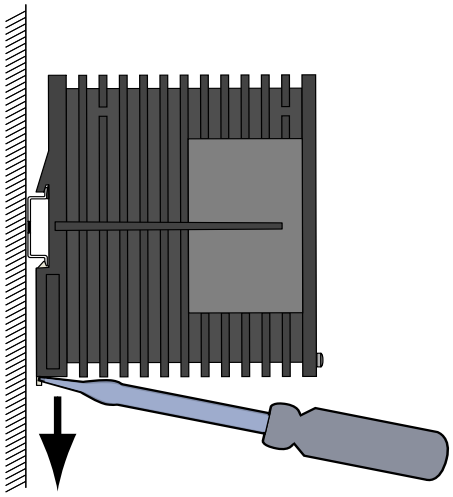
Disassembly

Removing the Device

1. Disconnect the data cables.
2. Disable the supply voltage.
3. Disconnect the terminal blocks.
4. Disconnect the grounding.

To remove the device from the DIN rail, perform the following steps:

1. Insert a screwdriver horizontally below the housing into the locking gate.
2. Pull the locking gate down without tilting the screwdriver.
3. Lift the bottom of the device away from the DIN rail.



⚠ WARNING

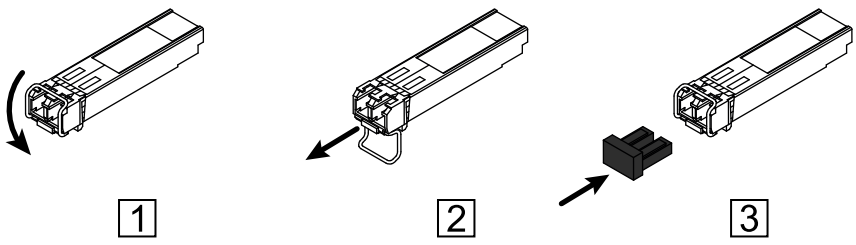
UNINTENDED EQUIPMENT OPERATION

Connect the DIN rail to the functional ground (FE) of your installation.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Removing an SFP Transceiver (optional)

The following figure shows how to uninstall SFP transceivers:



Perform the following steps:

1. Open the locking mechanism of the SFP transceiver.
2. Pull the SFP transceiver out of the slot from the open locking mechanism.
3. Close the SFP transceiver by inserting the protection cap.

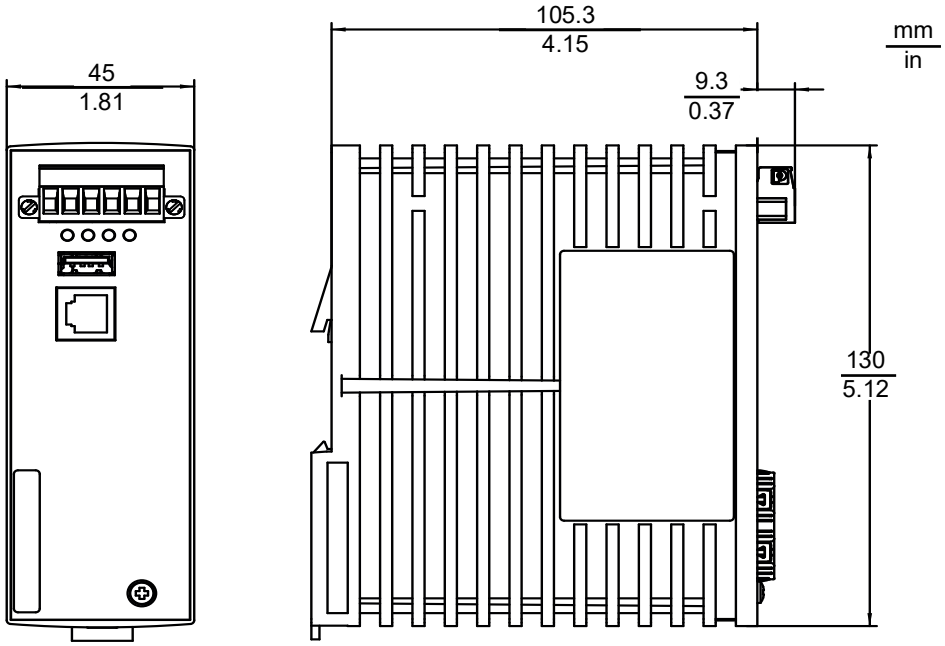
Technical Data

General technical data

Dimensions (w x h x d)	Refer to *Dimension drawings* on page 27	
Weight	MCSESR043F23F0•	290 g (10.23 oz)
	MCSESR043F2LM0•	291 g (10.26 oz)
Power supply	Refer to “Wiring Guidelines” on page 17.	
	Two voltage inputs for redundant power supply (or supplies)	
	AC rated voltage	24 V AC
	Voltage range including maximum tolerances	18 V AC ... 30 V AC
	DC rated voltage range	12 V DC ... 48 V DC
	Voltage range including maximum tolerances	9.6 V DC ... 60 V DC
	Connection type	6-pin terminal block with screw lock for redundant power supply (or supplies) and signal contact
	Power interruption buffer	> 10 ms at 20.4 V DC or AC > 2 ms at 10.2 V DC
	Overload current protection on the device	Non-replaceable fuse
	Back-up fuse for each voltage input when supply is from 2 inputs	Nominal value at 48 V 1 A
		Nominal value at 24 V 1 A ... 2 A
		Nominal value at 12 V 1 A ... 2.5 A
		Characteristic: slow blow
	Back-up fuse when 1 voltage input used	Nominal value at 48 V 1 A ... 2 A
		Nominal value at 24 V 1 A ... 4 A
		Nominal value at 12 V 1 A ... 5 A
		Characteristic: slow blow
	Peak inrush current	<14 A
	Permitted peak values for the input voltage with respect to the ground potential of the housing ± 60 V	
Environmental conditions during operation	Minimum clearance around the device	Top and bottom device side: 10 cm (3.94 in) Left and right device side: 2 cm (0.8 in)
		Derating: Refer to “Installing the Device onto the DIN Rail” on page 20.
	Ambient air temperature	Standard temperature range 0 °C ... +60 °C (+32 °F ... +140 °F)
		Conformal Coating and extended temperature range -40 °C ... +60 °C (-40 °F ... +140 °F)
	Maximum inner temperature of device (guideline)	+90 °C (+194 °F) Refer to “Ambient Air Temperature” on page 24.
	Humidity	10 % ... 95 % (non-condensing)
	Air pressure (altitude above sea level)	Minimum 700 hPa (+3000 m; +9842 ft) Maximum 1060 hPa (-400 m; -1312 ft)
Environmental conditions during transport and storage	Ambient air temperature	-40 °C ... +85 °C (-40 °F ... +185 °F)
	Humidity	10 % ... 95 % (non-condensing)
	Air pressure (altitude above sea level)	Minimum 700 hPa (+3000 m; +9842 ft) Maximum 1060 hPa (-400 m; -1312 ft)

Signal contact	Refer to “Wiring Guidelines” on page 17.	
	Imax = 1 A at Umax = 30 V AC (resistive load)	
	Imax = 1 A at Umax = 60 V DC (resistive load)	
	According to the UL Standards: Imax = 0.5 A at Umax = 30 V AC (resistive load) Imax = 1 A at Umax = 30 V DC (resistive load)	
Pollution degree	2	
Protection classes	Laser protection	Class 1 in compliance with IEC 60825-1
	Degree of protection	IP20
[1] Temperature of the ambient air at a distance of 5 cm (2 in) from the device		

Dimension drawings



EMC and immunity

The equipment described in the present document is not intended for use in domestic, residential environments and may not provide adequate protection to radio reception in such environments.

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⚠ WARNING

INSUFFICIENT ELECTROMAGNETIC COMPATIBILITY

- Verify compliance with all EMC regulations and requirements applicable in the country in which the device is to be operated and with all EMC regulations and requirements applicable at the installation site.
- Do not install and operate the devices described in the present document in residential environments.
- Implement all required radio interference suppression measures and verify their effectiveness.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Immunity		
IEC 60068-2-6, test Fc	Vibration	5 Hz ... 8.4 Hz with 3.5 mm (0.14 in) amplitude
		8.4 Hz ... 150 Hz with 1 g
IEC 60068-2-27, test Ea	Shock	15 g at 11 ms

EMC interference emission	
Emitted interference	-
EN 55032	Class A
EN 61000-6-4	Fulfilled

EMC interference immunity		
Electrostatic discharge		
EN 61000-4-2	Contact discharge	±4 kV
EN 61000-4-2	Air discharge	±8 kV
Electromagnetic field		
EN 61000-4-3	80 MHz ... 3000 MHz	maximum 10 V/m
Fast transients (burst)		
EN 61000-4-4	AC/DC supply connection	±2 kV
EN 61000-4-4	Data line	±1 kV
Voltage surges - DC supply connection		
EN 61000-4-5	line/ground	±2 kV
EN 61000-4-5	line/line	±1 kV
Voltage surges - AC supply connection		
EN 61000-4-5	line/ground	±2 kV
EN 61000-4-5	line/line	±1 kV
Voltage surges - data line		
EN 61000-4-5	line/ground	±1 kV
Conducted disturbances		
EN 61000-4-6	150 kHz ... 80 MHz	10 V

Network range
The line lengths specified for the transceivers apply for the respective fiber data (fiber attenuation and Bandwidth Length Product (BLP)/ Dispersion).

This table describes network range:

10/100/1000 Mbit/s twisted pair port	
Length of a twisted pair segment	maximum 100 m (328 ft) (for Cat5e cable)

Reference	Description	Wave length	Fiber	System attenuation	Example for fiber optic cable length[1]	Fiber attenuation	BLP/ Dispersion
MCSEAAF1LFU00	Fiber optic module SFP 100BASE-SX/LC, Multimode	1310 nm	50/125 µm	0 dB ... 8 dB	0 km ... 5 km (0 mi ... 3.11 mi)	1.0 dB/km	800 MHz×km
		1310 nm	62.5/125 µm	0 dB ... 11dB	0 km ... 4 km (0 mi ...2.49 mi)	1.0 dB/km	500 MHz×km
MCSEAAF1LFS00	Fiber optic module SFP 100BASE-LX/LC, Singlemode	1310 nm	9/125 µm	0 dB ... 13dB	0 km ... 25 km (0 mi ... 15.53 mi)	0.4 dB/km	3.5 ps/ (nm×km)

[1] Including 3 dB system reserve when compliance with the fiber data is observed.

Scope of delivery

Amount	Article
1 ×	Modicon MCSESR Redundancy Switch
1 ×	6-pin terminal block with screw lock (for redundant power supply and signal contact)
1 ×	MCSESR043F23F0(C) / MCSESR043F2LM0(C) Instruction Sheet (BRU59510)
1 x	MCSESR043F23F0(C) / MCSESR043F2LM0(C) Insert Sheet (BRU95092)

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As standards, specifications, and design change from time to time, please ask for confirmation of the information given in this publication.