



SEVIO R600

Installation guide



Legal information

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Under no circumstances shall Sevio be responsible for any loss of data or income or any special, incidental, and consequential or indirect damages howsoever caused.

More information about Sevio can be found at the following Internet address: <https://sevio.it/>.

Version history

Revision	Date	Description
0	2019/09/01	Emission
23_09	2023/09/01	First revision



Table of contents

Legal information.....	2
Version history.....	2
Safety.....	4
Regulatory Notices.....	5
Installation Countries.....	6
Warranty.....	6
Care recommendations.....	7
General Description.....	8
Package content.....	9
Product Identification and Version Information.....	9
Mechanical Installation.....	10
Electrical Installation.....	12
Status.....	18
Configuration.....	19

Safety

Important safety notes



Read this user guide carefully before mounting, installing and operating the device.



Do not operate the device in any other environmental conditions than it is designed for.

Before using this device

Read this manual completely and gather all information on the device. Make sure that you understand it fully. Check that your application does not exceed the safe operating specifications for this device.

Before installation

This device can only be installed by qualified personnel.



Regulatory Notices

Simplified EU declaration of conformity

Hereby, Sevio declares that the equipment is in compliance with EU directives. The full EU declaration of conformity and other detailed information are available at the respective product page at <https://sevio.it>.

United States (FCC)

FCC Compliance Statement

The enclosed device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: 1. this device may not cause harmful interference. 2. this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Contains FCC ID: **PANWM8192EU**

RF Exposure requirements:	To satisfy FCC RF exposure requirements for mobile transmitting devices, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during operation. To ensure compliance, operations at closer distances than this are not recommended.
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Canada (IC)

This device complies with Industry Canada's license-exempt RSSs. Operation is subject to the following two conditions: 1. This device may not cause interference. 2. This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: 1. l'appareil ne doit pas produire de brouillage. 2. l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

IC Certification Number of the implemented WLAN communication module:

6225A-WM8192EU

CAN ICES-3 (A)/NMB-3(A)



Agency approvals and standards compliance

Description	Standards
Health and Safety	EN 62368-1:2014 + A11:2017
	EN 62311:2020
EMC	ETSI EN 301 489-1 V2.2.3
	ETSI EN 301 489-17 V3.2.4
FWL	ETSI EN 300 328 V2.2.2
RoHS	EN IEC 63000:2018

Installation Countries

Installation country regulatory limits and operating parameters are controlled by software Country code parameter. This product supports:

Country Code	Operating Frequency Ranges	Notes
Europe (EU)	2412... 2472 MHz	Operation according to ETSI limitations
United States (USA)	2412... 2462 MHz	Operation according to FCC limitations
Canada (CANADA)	2412... 2462 MHz	Operation according to IC limitations

Note: Further software releases might support additional country codes, for up-to-date country code specification refer to Sevio Portal management guide.

Warranty

Any guarantee claim must be received before the end of the 2 years guarantee period and is to be enclosed with the returned claimed defective product within this same period, and must include Sevio return authorization number (RM No.).

Care recommendations

Follow the care recommendations below to maintain full operation of device and to fulfill the warranty obligations.

This device must not be operated with covers or lids removed.

Do not drop, knock or shake the device, rough handling beyond the specification may cause damage to internal circuit boards.

Do not use harsh chemicals, cleaning solvents or strong detergents to clean the device.

Do not paint the device. Paint can clog the device and prevent proper operation.

Do not expose the device to any kind of liquids (rain, beverages, etc). The device is not waterproof. Keep the device within the specified humidity levels.

Do not use or store the device in dusty, dirty areas, connectors as well as other mechanical parts may be damaged.

If the device is not working properly, contact the place of purchase, nearest Sevio distributor office or Sevio technical support.

Note: Do not use damaged equipment and/or accessories such as damaged power cord.

Note: Do not open the device. There are no serviceable parts inside.

Note: Product warranty gets void and any liability will be disclaimed when opening the device.

Note: Never unplug device from the power connector by holding the cable only, always disconnect the cable by applying force directly to the connector.

Symbols



CE marking, the product complies with the requirements of the applicable EU directives.



Direct current, DC



This symbol means that the product shall not be treated as unsorted municipal waste when disposing of it. It needs to be handed over to an applicable collection point for recycling electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help to reduce hazardous substances and prevent potential negative consequences to both environment and human health, which could be caused by inappropriate disposal.



General Description

SEVIO R600 is a Networking device aimed at providing a secure interconnection between industrial automation networks and external/remote IP networks.

It is mainly used as a network segment to isolate WAN and LAN networks. It offers Ethernet and serial, CAN bus interfaces (only for R600-RC) on the industrial automation side; while on the Networking side it provides Ethernet, Wi-Fi and cellular interfaces.

Along with the device, Sevio provides a distributed VPN service through a managed infrastructure, to allow remote access to routers and automation networks. The VPN service is accessible from PCs, smartphones, tablets equipped with appropriate credentials via standard VPN protocols.

The typical scenarios can be identified in:

- Remote access to automation devices for the purpose of troubleshooting, maintenance, control, assistance, reconfiguration, data collection.
- Machine to remote machine communication.
- Local data collection, processing, storage, retrieval and transmission to outside premises.
- An application platform to enable the integrator to deploy software where both connectivity to the outside world and to automation networks/buses are available.
- Providing alarms and notifications services to the automation devices.

Typical users of Sevio routers are:

- OEMs
- System integrators
- End users

The device can only be installed by instructed or skilled persons in electrical cabinets onboard or in the vicinity of the machines.

The configuration may be performed locally configuring the web server or web application named Sevio Portal.

Although requiring a certain level of competence in Networking and Security, the configuration is usually very simple and automated.

Package content

The package contents of following main components:

- 1 Sevio router (R600 or R600-SC or R600-POE or R600-SC-POE)
- 1 power terminal block connector
- 1 Wi-Fi antenna
- 1 quick guide

If any components are missing or damaged or if you have any questions regarding the contents, contact us at support@sevio.it.

Product Identification and Version Information

Identification information is available on the left side of the device:

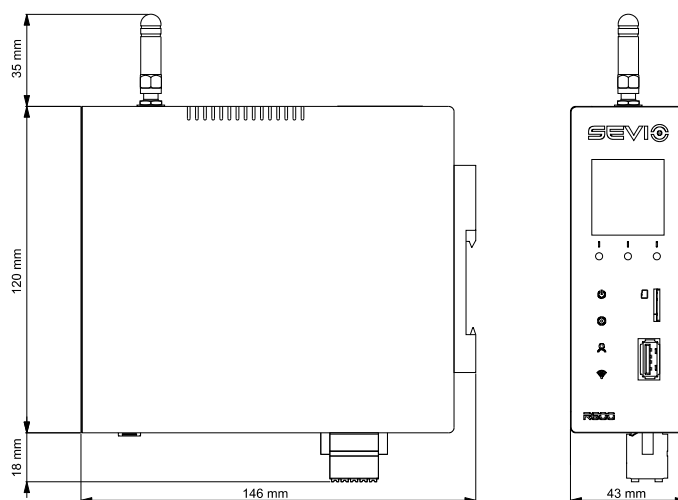


Specification	Value	Notes
MODEL	R600	R600 router
	R600-SC	R600 router with serial / CAN bus option
MFGD	YYYYMMDD	Manufacturing date
SERVICE TAG	XXXXXXXX	7-characters alphanumeric unique code given to the device
REGISTRATION KEY	XXXX-XXXX-XXXX	Registration key for Sevio Portal
BAR CODE		Service Tag barcode

Mechanical Installation

Mechanical Overview

Maximum dimensions, with 35 mm antenna length and without cables	173 x 146 x 43 mm (H x D x W)
Space needed for installation (with external antenna)	Approx. 220 x 150 x 100 mm
Enclosure	Aluminum
Weight	400 g
IP Protection	IP30

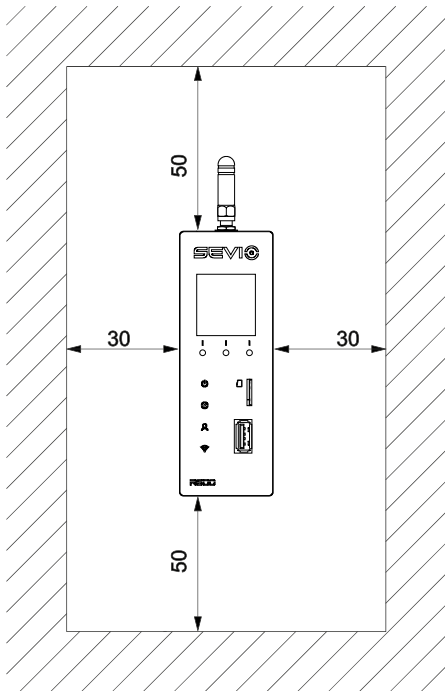


Mechanical drawings files are available at <https://sevio.it>

Environmental

Operating temperature	-20 °C to 55 °C
Storage and transport temperature	-40 °C to 85 °C
Operating humidity	10% to 90% RH
Storage and transport humidity	10% to 90% RH
Operating altitude max.	3000 m

Cooling



Note: measurement unit in mm.

This device uses passive convection cooling. For this reason sufficient air circulation should be guaranteed.

The amount of cooling needed depends on the ambient temperature, the transmission power and the intensity of data traffic.

If operating at extremes ensure that proper clearances, as shown in drawing, are given.

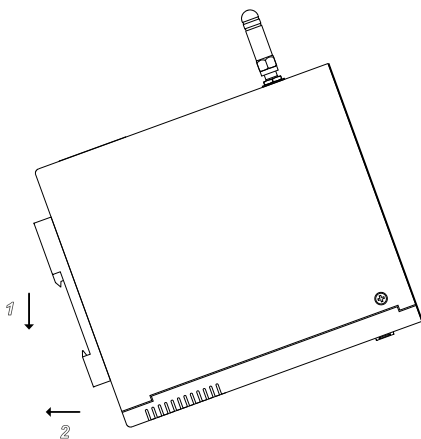
Avoid exposure to direct sunlight.

Temperature Alarms

This product has integrated temperature sensors for monitoring the internal device temperature. The limits for the sensors are set so, that operation without alarm is ensured for ambient temperatures as specified for the product assuming correct installation.

Whenever the sensed temperature exceeds the specified limit the operation will be suspended and resumed automatically when the temperature decreases under a safe value.

Mounting



This device is equipped with a spring-loaded clip to hold the device on a standard 35 mm DIN rail.

The device is intended to be mounted vertically.

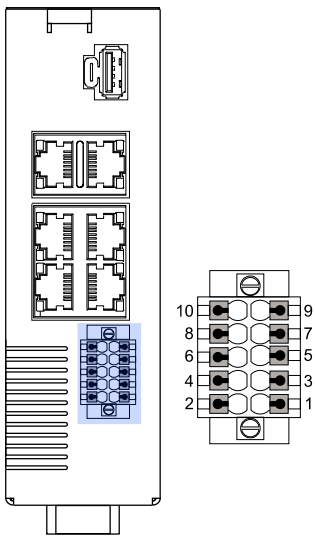
The top of the hook must first be set on the DIN rail. Then just press down (step 1) and at the same time rotate the device until it is flush with the rail (step 2). Finally release the force on the spring and check that it gets properly seated.

Electrical Installation

Power Supply

This device supports redundant power connection. The positive inputs are V+A and V+B, they can be used interchangeably in a redundant configuration. The negative input for both supplies is V-. Connect the primary voltage (e.g. +24 Vdc) to the V+A pin and return to one of the V- pins on the power input.

The device is protected against polarity inversions.



PIN	Mark	Description
1	V+ A	Power Supply (A)
2	V-	Power Ground
3	V+ B	Power Supply (B)
4	≡	Chassis Ground
5	V+ IO	Digital Input/Output Supply
6	V- IO	Digital Input/Output Ground
7	O1+	Digital Output 1 V+
8	O2+	Digital Output 2 V+
9	I1+	Digital Input 1 V+
10	I2+	Digital Input 2 V+

Power connector: B2CF 3.50/10/180F SN BK BX

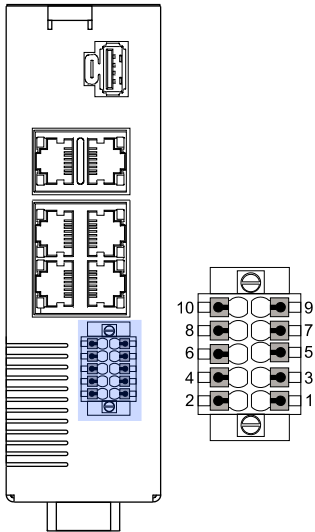
Note: signal ground and chassis ground are connected via a low AC impedance to a single point. The chassis may be optionally grounded externally via the supply connector.

	Min.	Typ.	Max.	Conditions
V+ voltage	+12 Vdc		+48 Vdc	
V+ voltage (absolute limits)	+11.4 Vdc		+57.6 Vdc	
V+ input current			0.6 A	Full load @ V+ = 48 V
V+ input current			2.8 A	Full load @ V+ = 12 V
Input power			28.8 W	Full load
Idle power		2.5 W		Idle CPU, no ports connected

Note: The equipment shall be supplied by ES1/SELV power sources according to IEC/EN 62368-1, protected by a 3.15 A fuse. Transient voltage has been considered as 1500 Vpeak.

I/O connection

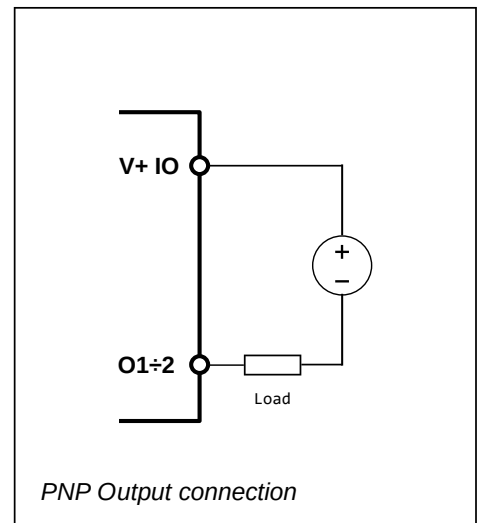
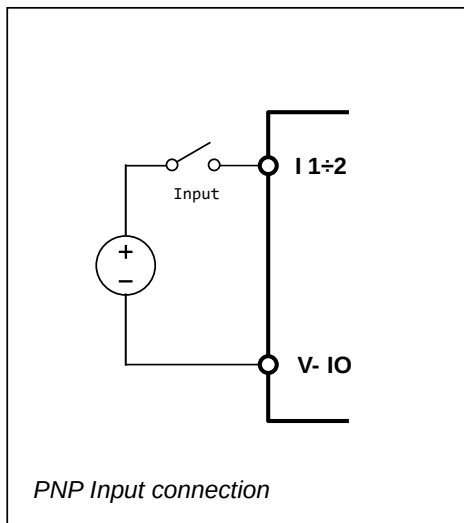
The device has 2 digital inputs and 2 digital outputs overvoltage, overcurrent and short-circuit protected. Power, ground and I/Os are insulated and photo-coupled.



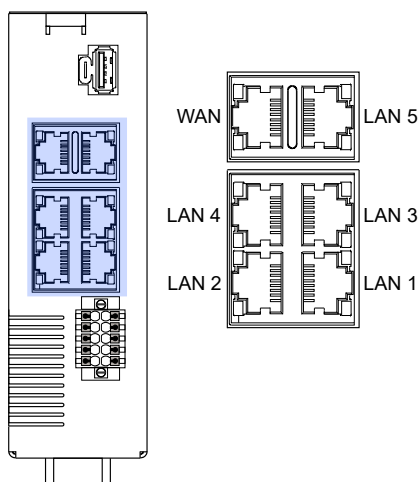
PIN	Mark	Description
1	V+ A	Power Supply (A)
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4	≡	Chassis Ground
5	V+ IO	Digital Input/Output Supply
6	V- IO	Digital Input/Output Ground
7	O1+	Digital Output 1 V+
8	O2+	Digital Output 2 V+
9	I1+	Digital Input 1 V+
10	I2+	Digital Input 2 V+

	Min.	Typ.	Max.	Conditions
Isolation (both DI & DO)			1.5 kV	
IO V+ input voltage	+5 Vdc		+58 Vdc	
IO V+ input current			1200 mA	
DI [1÷2] input voltage	0 Vdc		+58 Vdc	
DI [1÷2] input current	0.6 mA		10 mA	
DI [1÷2] input low threshold			3.0 Vdc	
DI [1÷2] input high threshold	4.5 Vdc			
DI max frequency			8 kHz	
DO [1÷2] output voltage			IO V+	
DO [1÷2] output current			300 mA	@ V+ = 24 V

Wiring the Digital Inputs (DI) and Digital Outputs (DO)



Ethernet Interface



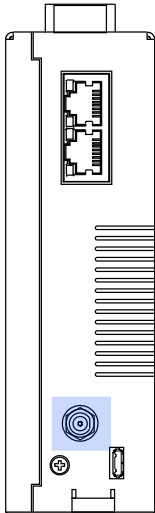
Port	Standard	Use
WAN	100BASE-T	External LAN
LAN1÷5	1000BASE-T	Local LAN (automation network)

Connector type	RJ-45 shielded
Cable type	CAT 5e or better, shielded
Autonegotiation	Yes
Auto MDI/MDI-X	Yes
Speed	10 Mbit/s, 100 Mbit/s, 1000 Mbit/s (except WAN port)
Duplex	Full, Half
Transmission distance max.	110 m

Wi-Fi Interface

SEVIO R600 is a radio device operating at 2.4 GHz WLAN bands, and configurable either as Access Point or Client. The web server or Sevio Portal, the web application for the Sevio system, can be used to configure and view the status of the Wi-Fi interface.

RF Antenna Connector



The antenna might be fixed to the antenna connector directly or using antenna cable.

Note: only approved antennas can be used.

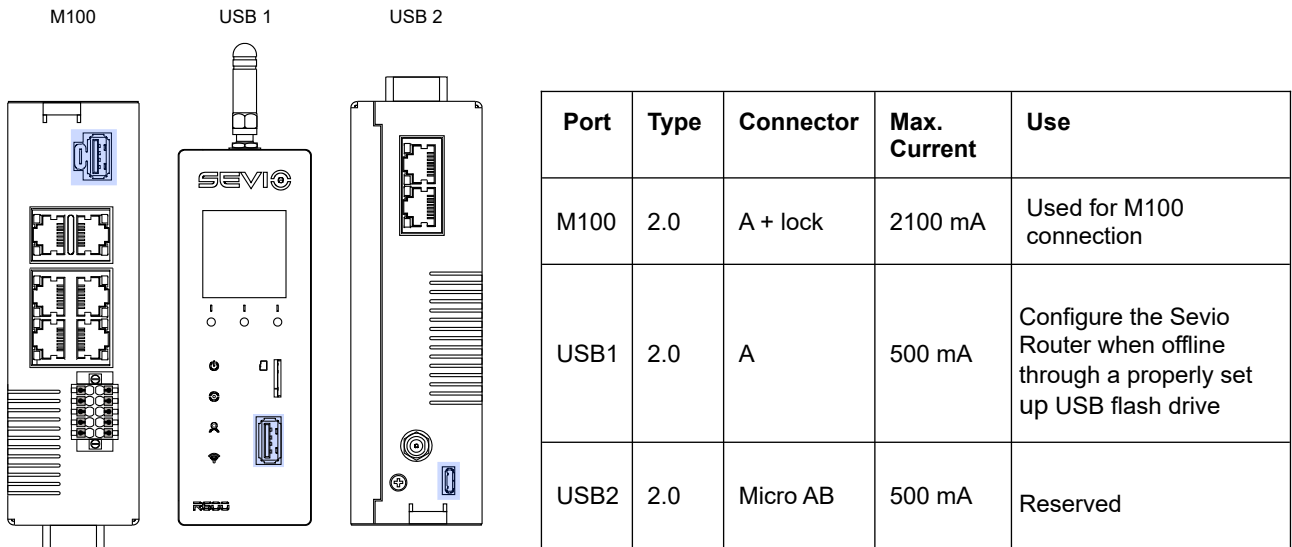
Type of Radio interface	IEEE 802.11b/g/n 2.4 GHz (Wi-Fi)
Operating Frequency Bandwidth/s	2412MHz - 2472MHz
Radio Frequency Power	< 20 dBm EIRP
Type of modulation	DBPCK/DQPSK/CCK/BPSK/QPSK/16QAM/64QAM/802.11B/G/N
Channel Spacing	10 / 20 / 40 MHz
Antenna type	Dedicated dipole 2.20 dBi antenna

Certified Antenna for FCC and IC

The following antenna can be used with the device:

Type	Part number	Manufacturer	Gain	Connector
Dipole	RN-SMA4-RP	Microchip	2.2 dBi	RP-SMA

USB

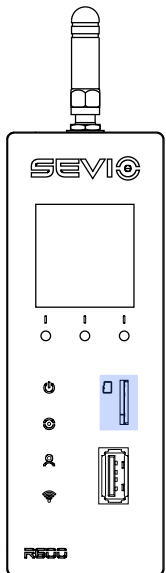


All ports are protected from overcurrent and short circuit.

Note: The M100 USB port is equipped with security lock, while removing the USB cable, move the flap.

Note: The cable must be shorter than the 5m allowed in the USB standard.

μSD



Insert microSD Card

The microSD card slot uses a push-push mechanism. The card should be inserted with the top side facing left. Press the card with a fingernail or soft tool further until you feel a click.







Remove microSD Card

Wait until the microSD LED is green (ready to eject).

Push the microSD card further into the microSD card slot until you feel a click. The card can be pulled out.

Status

LED indicators

LED	Status	Description
	OFF	Power off
	GREEN	Normal operation
	AMBER	Device in updating
	RED	Device in failure
	OFF	VPN is not ready
	GREEN	VPN connection is established
	AMBER	VPN connection is locked
	RED	VPN connection in failure
	OFF	No active session
	GREEN	Session in progress
	AMBER	Session locked
	OFF	Wi-Fi disabled
	GREEN	Wi-Fi is enabled
	AMBER	Wi-Fi authentication is failing
	OFF	μSD is not inserted
	GREEN	μSD is ready to eject
	AMBER	μSD is in read/write mode
	GREEN	Activity LED
	AMBER	Connection speed LED



Configuration

The device is configurable via web server or Sevio Portal, the web application accessible via any updated web browser:

1. Open <https://sevio.it/> and click on Sevio Portal in your web browser.
2. If you already have an account just log in as usual and add this new device to your list of devices, otherwise register a new account following the instructions in Sevio Portal.



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<https://sevio.it/>