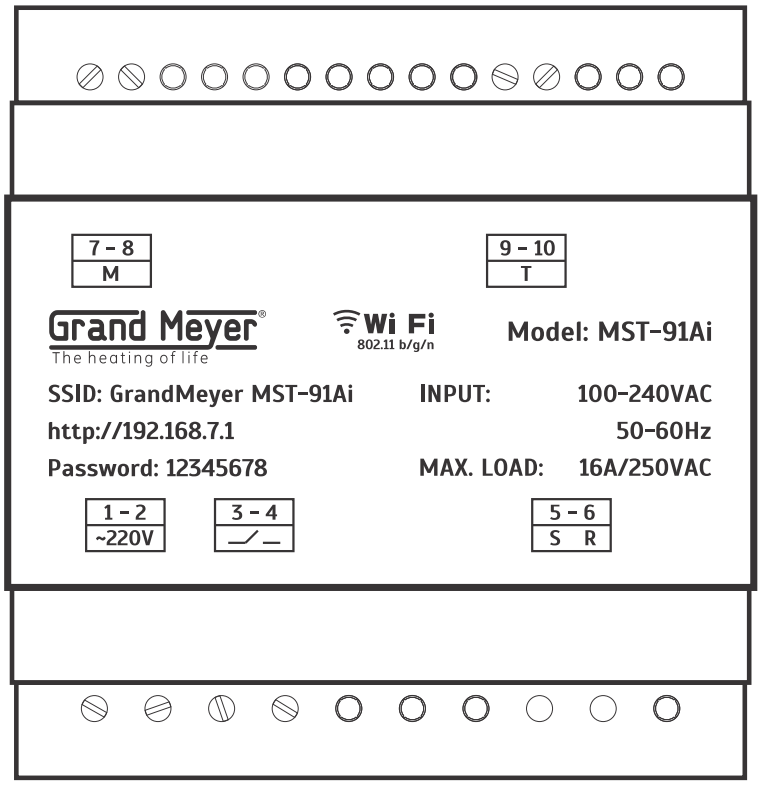
Grand Meyer®

The heating of life

Wi-Fi thermostat-weather station

MST-91Ai



INSTALLATION GUIDE

EN

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Introduction

Wi-Fi thermostat-weather station MST-91Ai (hereinafter referred to as the weather station) is designed to control cable anti-icing systems for roofs, open areas, pipelines, and tanks, as well as any other cable systems for electrical heating.

The weather station was designed using dual-core microprocessor technology using the RTOS (real-time operating system), which made it possible producing an exceptionally reliable snow melting system. Using several unique settings and algorithms, our own weather service and technology for remote access to weather station sensor data, we have created a flexible and economical next-gen snow melting system.

The weather station has one channel (1 control relay) and can control one heating system.

The weather station supports the following types of sensors:

Sensor type	**Name (Article)**	**Abbreviation**
Temperature / surface sensor	Grand Meyer TS-1	TS
Moisture and precipitation sensor	Grand Meyer TS-2	MPS

The weather station can work fully autonomously with the Internet weather service (no sensors required or using weather service data when sensors are disconnected/unavailable).

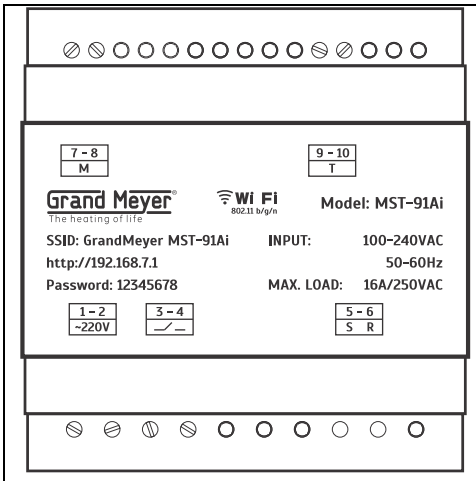
The weather station is configured and managed via the integrated web interface.
This interface allows customers to remotely access all the functions and settings of the system. It is also allowed connecting the weather station to the Telegram messenger for real-time alerts on various events and control of the weather station (turning the heating section on and off, etc.).

Specifications

Supply voltage	~100-240V, 50(60)Hz
Power consumption	no more 5W
Number of control channels (relay)	1
Control relay contact current/load	16A/250V
Type of relay contacts	NO(SPDT)
Number of channels of temperature sensors	1
Temperature measuring range	-40°C …+120°C
Temperature accuracy	± 1.0°C
Number of channels of water and precipitation sensors	1 channel: - 1 sensor MPS
The number of gradations of measurement levels (sensitivity) of the sensor of water and precipitation	2(0-dry, 1-presence of water precipitation)
Wi-Fi standard	802.11b/g/n
Wi-Fi Output	+19.9dBm
Wi-Fi frequency range	2.4GHz
Enclosure Rating	IP20
Operating temperature range	-30°C…+80°C at humidity up to 80%
Wire cross section of sensor cables connected to the weather station terminals	Up to 2.5mm²
Wire cross section for control relay and power supply cables connected to weather station terminals	Up to 2.5mm²
Dimensions	86 (H) mm x 90 (W) mm x 65 (D)mm
Body color	Light gray
Type of mount	DIN-rail
Weight	165g
Internal fuse rating	0.5A
Compatible temperature sensors	Grand Meyer TS-1
Compatible moisture and precipitation sensors	Grand Meyer TS-2

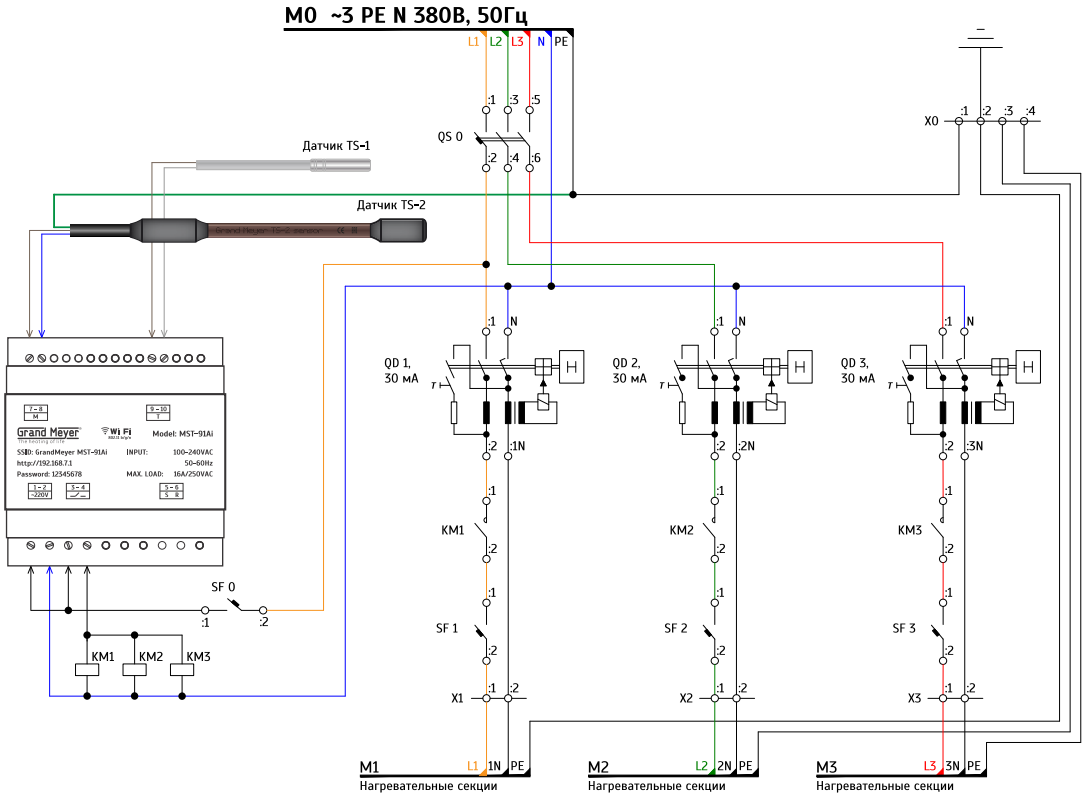
Device and wiring diagram

Device



LEDs:
Red on when power is applied to the device.
Blue, lit when connected to the Internet.
Buttons:
S – reset Wi-Fi settings and access password.
R – reboot device.

Wiring diagram



Connection table

Appointment		№ terminal block	Description	Sensor wire color
Supply voltage		1	~100/240V (L)	
		2	~100/240V (N)	
Relay		3	Relay(independent contact)	
		4	Relay(independent contact)	
M		7	sensor MPS	Brown
		8	sensor MPS	Blue
T		9	sensor TS	Brown
		10	sensor TS	White

Installation and assembly

Installation of a weather station

The weather station is mounted on a DIN rail with the special latch is provided on the back cover of the case. Connections of the heating sections of the system are carried out after their installation and verification. Power supply of the weather station is performed through the circuit breaker after checking all the connections. After power-up, the red LED should light up.

When installing a weather station, keep in mind the following restrictions:

	The operating temperature range of the weather station is from -30ºC to + 80ºC with humidity up to 80%.
	Protection class IP20, the housing is not waterproof.
	Power devices and wires going to them should be located at a distance of at least 10 cm from the weather station building.
	When connecting, the current electrical safety regulations must be observed.
	All electrical connections must be made by a qualified electrician.
	Attention! The sensor and the sensor cable for water and precipitation are under voltage!

Installation and connection of sensors

Correct placement of sensors is particularly important for the correct operation of the system.

Temperature sensor Grand Meyer TS-1 (TS)

The temperature sensor can be used for the following measurements:
• ambient temperature.
• temperature of the heated open area (screed, soil).
• surface temperature of the pipe (tank).

Technical characteristics of the temperature sensor TS

Temperature measuring range	-40°C…+120°C
A type	analog
Temperature accuracy	± 1.0 °C
Active sensor element	NTC (12 кOhm at +25 °C)
Sensor Cable Length	3m
Maximum cable extension length	100m
Extension cable	2-wire, with copper conductors 0.75mm²
Overall dimensions of the sensor	Ø6mm x 30mm (length)
Weight	100g

The weather station should be connected according to the connection diagram.

Power supply wires should not be located near the sensor cable, as they can interfere. If necessary, shorten or extend the sensor cable. To connect the sensor cable, use a mounting box with a terminal block or sets with heat-shrink tubing.

Installing an ambient temperature sensor

The ambient temperature sensor (DT) should be installed inside an empty installation box with a degree of protection of at least IP65, which can be mounted both on the building itself and on the roof elements. For a more accurate indication of the ambient temperature, the box with the sensor is mounted in the places that are most protected from sunlight, outside the range of exhaust ventilation, attic, etc.

Installation of a temperature sensor for a heated open area (screed, soil)

The temperature sensor of the heated open area (screed, soil) should be mounted in the middle between the turns of the heating cable at a distance of 40-60 cm from the boundary of the beginning of the heating circuit. The sensor cable is drawn inside a steel plugged pipe at the end of the pipe or inside a corrugated tube made of self-extinguishing PVC Ø 16-25mm and connected to the weather station through an intermediate mounting box.

Installation of the temperature sensor of the heated pipeline (tank).
The temperature sensor of the heated pipeline (tank) should be installed on the outer wall of the pipe (tank). The sensor is glued with adhesive aluminum mounting tape and connected to the weather station through an intermediate mounting box.

Sensor of the presence of melt water and precipitation Grand Meyer TS-2 (MPS)

The sensor is used to detect the presence of melt water and precipitation in the drainage elements (trays, gutters, valleys, etc.). It is made of a 50-centimeter section of a self-regulating cable, the heat emission of which varies depending on the environmental properties (temperature, atmospheric precipitation, melt water and humidity) of the sensor location. The current dependence of the sensor, proportional to its heat dissipation, is analyzed by a weather station, which, on the basis of the received data, issues a command to turn on / off the heating sections of the heating system.

Using this sensor, the following benefits can be achieved:

- TS-2 sensor is not influenced by the pollution, therefore, it does not require cleaning.
- The TS-2 sensor cannot be covered with a “snow cap”.
- TS-2 sensor works like the heating sections on the roof, melting snow at the same speed.

Technical characteristics of the MPS sensor

Supply voltage	220V - 230V alternating current, 50(60)Hz
Power consumption	8 - 16 W (in dry condition)
Operating temperature range	-60°C …+65°C (+85°C when off)
A type	self-regulating cable
The number of gradations of precipitation measurement levels	2(0-dry, 1-presence of water precipitation)
Degree of protection	IP67
Sensor Cable Length	3m
Maximum cable extension length	100m
Extension cable	3-wire shielded, with copper conductors 0.75mm²
Contents of delivery	Sensor TS-2
Weight	220g
Overall dimensions of the active surface of the sensor	11.5 mm x 500 mm

Connection to the weather station should be carried out according to the connection diagram.
To connect the sensor cable, use a mounting box with a terminal block or sets with heat-shrink tubing.

Installation of an MPS sensor on the roof

The sensor should be installed in the gutter as close as possible to the drainpipe or the inlet funnel of the drainpipe or in places on the roof where there is the greatest likelihood of melt water and precipitation. It is important that melt water and precipitation fall on the active element of the sensor and do not interfere with tree branches, neighboring roofs, roof structures, etc. The sensor must be straightened and fixed with special clamps (included in the delivery package with the weather station) next to the heating section, without touching it, parallel to it.

Attention! The sensor and the sensor cable for water and precipitation are under voltage!

Connecting to the web interface of the weather station

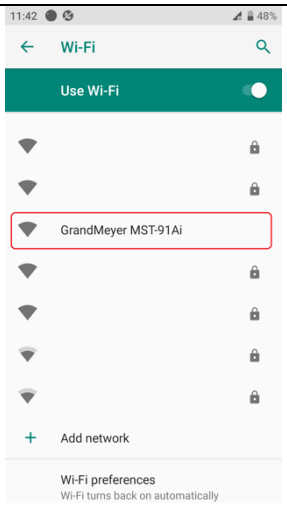
The weather station can operate in two Wi-Fi modes:

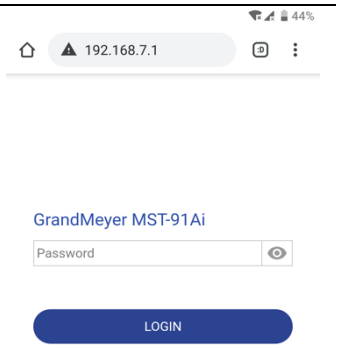
• AP access point mode - autonomous operation without connecting to the Internet (in this mode, the weather station creates its own Wi-Fi network).

• Station mode - work with connecting to another Wi-Fi network and to the Internet.

The first time you turn it on, the weather station will be in AP mode.

Connecting to the web interface when you first turn on the weather station:

1	Connect to a Wi-Fi network with a network name (SSID): **Grand Meyer MST-91Ai.**	
2	In the address bar of the browser, enter the local IP address of the weather station: **192.168.7.1**	



3 On the weather station page, enter the access password: **12345678**

Make further settings according to the instruction manual.

Reset Wi-Fi settings and access password

This function is used to reset the password for accessing the weather station web interface. In this case, all Wi-Fi network settings are reset, all other settings are saved.

To reset, do the following:

Press the "S" button and without releasing it, briefly press the "R" button.

After flashing the blue LED, release the “S” button. After the reset, the weather station will be in AP mode, as after the first power-up. To access the web interface of the weather station, use the settings as when you first turned on the weather station in the **“Connecting to the web interface of the weather station”** section.

Security measures

- The weather station must be installed and connected by a qualified electrician.
- All installation and connection of the weather station should be carried out with the power supply turned off.
- Do not unplug the device.
- Do not allow liquid or moisture to get on the device.
- Do not clean the device with chemicals such as benzene and solvents.
- Do not store the device or use the device in dusty places.
- Do not attempt to disassemble or repair the device yourself.
- Do not exceed current and power limits.
- Use lightning arresters to protect against overvoltage caused by lightning discharges.
- Do not incinerate or dispose of the device with household waste.
- The used device must be disposed of in accordance with applicable laws.
- Goods are transported in packaging that ensures the safety of the product.
- The device is transported by any type of vehicle (railway, auto, sea, air transport).

Warranty Terms

The manufacturer guarantees that the product meets the specifications specified in the Installation Manual.
Warranty period - 3 (three) years from the date of sale.

The manufacturer's warranty provides for free repair or replacement of the product during the entire warranty period, subject to the following conditions:

• the product was used for its intended purpose;

• installation and operation of the product was carried out in accordance with this Installation Guide and the Operation Manual;

• the product does not have mechanical damage that caused malfunctions (including, but not limited to: liquids, breaks, chips, cracks in the product);

• the rules and requirements for transportation and storage of the product have been complied with;

• A Warranty Certificate is filled out with the name of the organization and the seller's stamp;

• If at the time of diagnosis or after it is established that any of the listed conditions is not met, the Manufacturer or his representative has the right to refuse warranty service, having issued an appropriate conclusion.

The product is withdrawn from the warranty and free repair / replacement of the product is not performed in the following cases:

• the warranty has expired.

• the product was damaged during transportation after receiving the goods or storage, in case if the product was not put into operation; or the rules for installation and operation, transportation and storage were violated.

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Declaration of conformity

Description of equipment: Wi-Fi thermostat-weather station

Model: **MST-91Ai**

Brand: **Grand Meyer**

Company: **Grand Meyer B.V.**

We hereby declare with full responsibility that the above-mentioned products comply with all technical regulatory documents applicable to this product within the framework of the Council of Europe Directives.

The equipment meets the requirements of the following standards or other regulatory documents:
EN55032

EN60730-1:2011

EN60730-2-9:2011

CISPR 14-1:2011

CISPR 22:2014

EN61000-3-2:2014

EN61000-3-3:2013

IEC62321:2013

Warranty Certificate

Product Serial Number: _____

Seller: _____

Date of sale: _____ **Signature:** _____

Print:

Contractor for electrical work: _____

Installation Date: _____ **Signature:** _____

To get the Grand Meyer Guarantee, all fields must be filled out,
stamped with official Grand Meyer dealer.
Complaints are submitted through the company that performed the final sale.
I have read the Installation and Operating Manual.
I agree with the manufacturer's warranty conditions, see "Warranty Conditions".
There are no complaints about the appearance and configuration of the product.

Buyer: _____ **Signature:** _____

Link to instructions

http://grand-meyer.nl/informatie/mst-91AI-Instruction/