STE2 Lite / R2 / PLUS - 3 Different Versions for Various Monitoring Applications

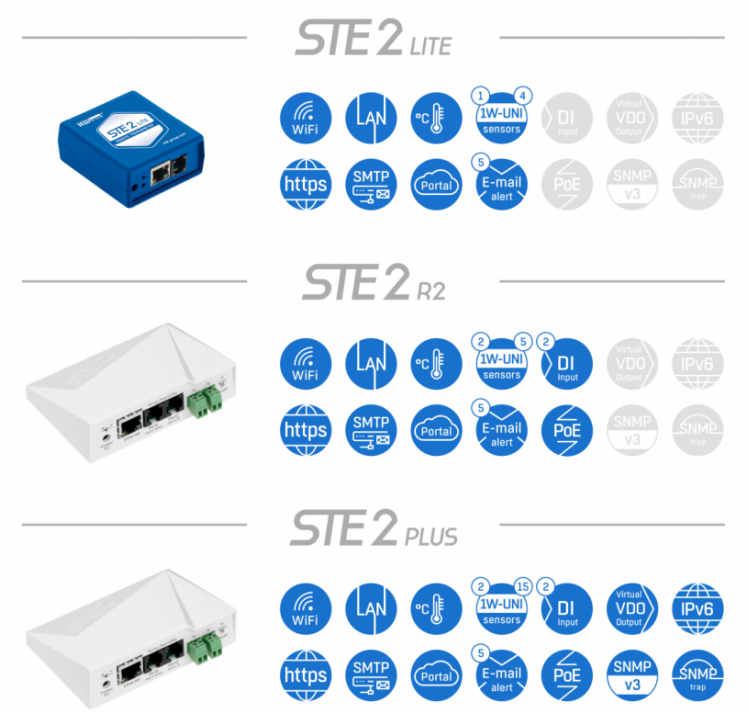
How can you easily and efficiently remotely monitor environments (temperature, humidity, air quality, light, etc.) in refrigerators, warehouses, data centers, offices, homes, schools, and industries with cloud-based monitoring capabilities? All these applications can be addressed with the STE2 series. Three different models, each with its own unique features, enable efficient implementation of various environmental monitoring tasks.

WiFi & LAN monitoring for any application

HWg STE2 is a series of measuring and monitoring devices designed to connect

digital sensors for various parameters (temperature, humidity, air quality/CO2, water leakage, electrical voltage or current, etc.) on one side and to connect to a local computer, laptop, tablet or smartphone via standard wired LAN Ethernet or wireless WiFi communication on the other side, using an Internet connection (LAN or WiFi router).

In hotels and lodging, pharmacies and healthcare, various stores and retail chains, warehouses and storage facilities, the monitoring devices collectively referred to as STE2 can be used flexibly and effectively. Since different environments and applications require different numbers of sensors, monitoring, evaluation and communication services, three different versions are available with appropriately graded features and corresponding prices:



- **STE2 PLUS**- professional monitoring of various parameters, even for large systems, using 1-Wire and digital sensors.
- **STE2 R2**- flexible monitoring of temperature and humidity in different environments using 1-Wire and digital sensors.
- **STE2 LITE**- easy monitoring of temperature or air quality.

All STE2 units have several features in common

They can measure the following parameters:

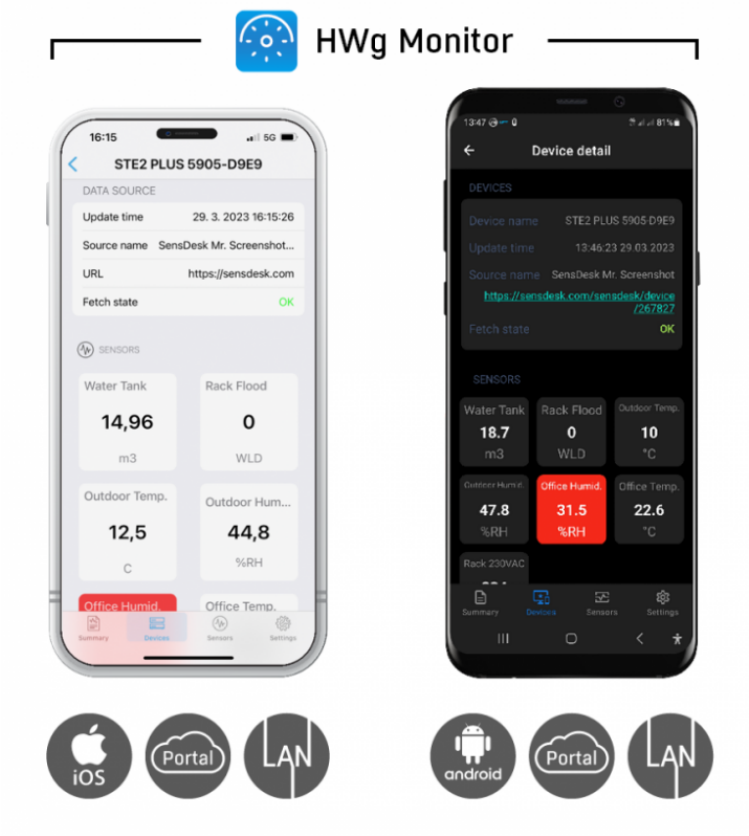
- Measurement of outdoor and indoor temperatures in the range -200 to +200 °C.
- Measurement of relative humidity from 5 to 95% RH.

- Measurement of air quality/CO2/VOC.
- Water presence/leakage detection.
- Measurement of DC and AC electrical voltage (up to 230 V) and DC and AC power supply current.
- Detection/measurement of light presence and intensity.

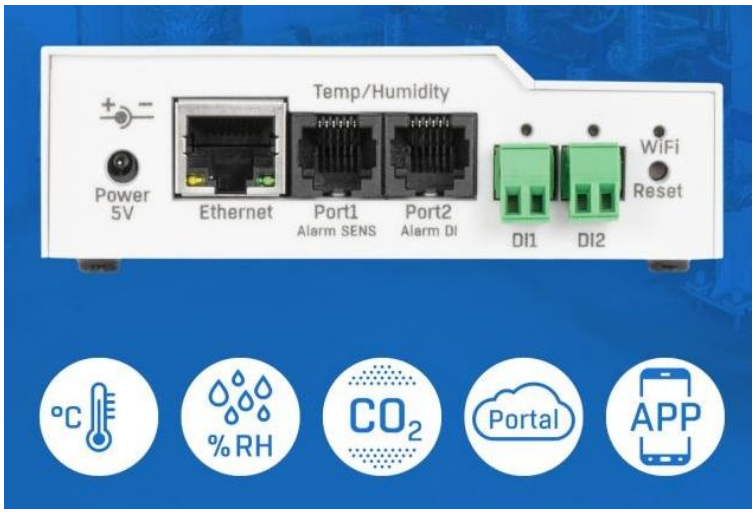
1) All STE2 devices provide both LAN and WiFi remote connections to a computer or LAN/WAN router.

2) They can also be connected to a smartphone application, HWg Monitor (Android or iOS).

3) Optionally, they can be connected to the Internet cloud portal HWg-cloud.com (free for small basic applications).



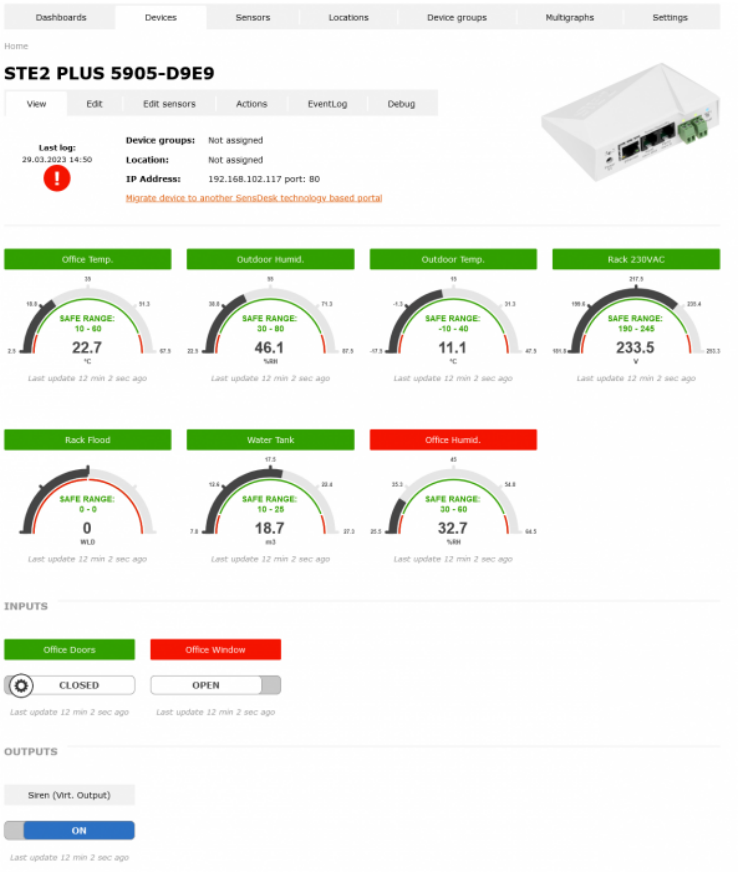
STE2 PLUS - Professional Environmental Monitoring



STE2 PLUS is the latest addition and a professional product for remote monitoring of systems and environments via external sensors and LAN or WiFi networks. It supports fixed IP addresses as well as DHCP and provides higher security through HTTPS certificates, TLS authentication, SNMPv3 and IPv6. Whenever the measured values of parameters exceed or fall below predefined limits, an alert is sent. In this regard, STE2 PLUS directly supports sending SNMP traps and e-mail alerts (via SMTP) or disconnecting the device via the HWg-cloud.com portal service. The device can be connected to the network via WiFi IEEE 802.11 b/g/n or LAN 10/100Mbit (built-in RJ45 port) and can also use XML API for integration with third-party systems.

Sensors can be connected to two RJ11 ports. In addition, sensors can be daisy-chained to provide a total of up to 15 readings from different types of 1-wire sensors. A physical sensor can provide not only a specific measurement (e.g. %RH, cryo temperature, CO2, VOC, 4-20mA, flood detection, etc.), but in some cases multiple measurements simultaneously (e.g. °C + %RH + VOC = 3 measurements). In addition, digital/two-state sensors with switchable outputs can be connected to two digital inputs for detectors. Using relay outputs on another LAN device connected to the same cloud portal, the STE2 PLUS can control up to 8 supported VDO (Virtual Digital Output) devices.

The STE2 PLUS package includes a 5V power supply and a 3m temperature sensor cable with RJ11 connector. The unit can also be powered using Power over Ethernet (PoE) technology.



Typical Use Case - data center and server room monitoring



Do you have large data centers, server rooms or control centers with a significant amount of IT and computer equipment? As is well known in this industry, it is critical to monitor the environment, whether it is a room or a specific rack. Data centers typically represent hundreds of thousands or millions of dollars of investment. Therefore, when certain events occur, the consequences can be even more significant due to the data stored and managed. Possible consequences include

component overheating leading to a fire hazard, room flooding including distribution racks, or unauthorized access and data loss or tampering. The STE2 PLUS can monitor, track and alert on temperature, humidity and potential flooding or proper power supply anywhere in cabinets or racks by daisy-chaining up to 15 1-wire sensors up to 60 meters apart. Industrial use in distribution racks is also supported, including DIN-rail mounting with an additional bracket.

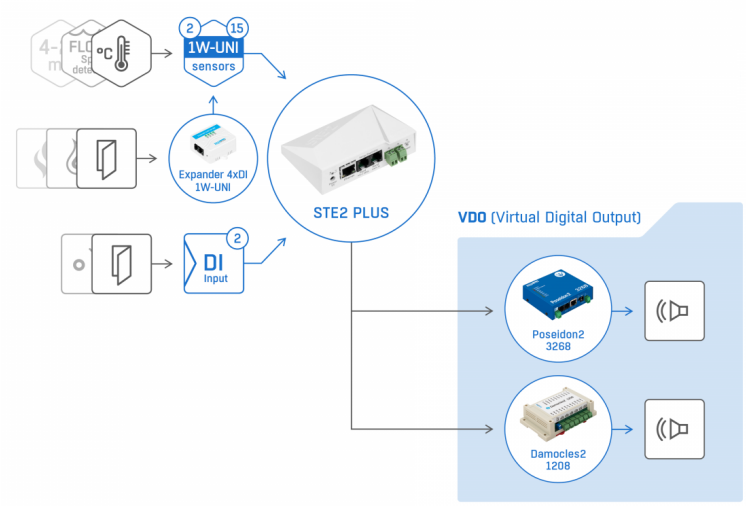
Other potential applications include:



- Control systems, control rooms, IT centers, racks ->monitor temperature, humidity or flooding in multiple locations simultaneously.
- Medical facilities - refrigerators, freezers, drug storage ->monitor stable temperature and humidity conditions.
- Large food warehouses/supermarkets ->control stable storage climate in multiple locations (temperature, humidity, air pressure), create HACCP protocols using application software.
- Large greenhouses & nurseries ->efficient monitoring of temperature, humidity and possibly lighting simultaneously in different locations.
- Archives, libraries, museums ->environmental control of exhibits and air

quality for visitors.

- Large public buildings ->monitoring of CO2, temperature, humidity + security options (PIR, smoke detection, flooding).
- Heat exchange stations and building distribution systems ->monitoring for water leaks or flooding.



STE2 R2 - Reliable Remote Temperature and Environmental Monitoring



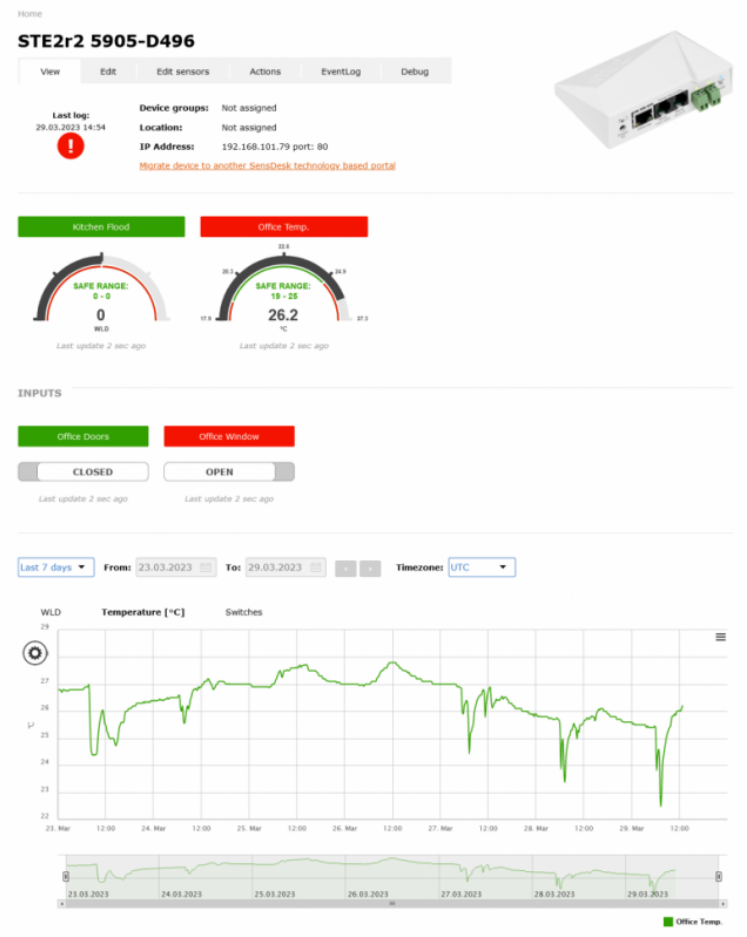
STE2 R2 is primarily designed for remote temperature measurement and other parameter monitoring in less extensive applications and services compared to STE2 PLUS. However, many functions are shared. Again, two RJ11 ports can measure up to 5 different values from 1-Wire sensors, and two DI (digital inputs) can monitor the on/off status of various external devices equipped with switchable relay outputs

or various detectors (e.g. smoke or door contacts). The device supports a web interface, Open API (SNMP, XML), sending alerts via email (SMTP) or SMS (through an external SMS-GW-LTE unit).

Another feature is the ability to connect STE2 R2 to the cloud (Internet) portal HWg-cloud.com, which allows easy monitoring and management of the device via a web browser on any PC, tablet or smartphone. The portal centralizes device management, graphs and provides email alerts. You can define up to 3 sets of targets and assign them to individual sensors. PDF reports are also available. SMS alerts can be sent using an SMS-GW3 gateway with a SIM card.

However, the use of the Cloud Portal is optional, as STE2 units can operate without it (i.e. without connecting the device to the Internet). For complete configuration, it has a built-in web server that allows the use of any local PC with a web browser over a local wired Ethernet or wireless WiFi network. You can also download HWg-PDMS PC software for graphing and data export to MS Excel without connecting STE2 R2 to the Internet or Cloud Portal (free for use with a maximum of 3 sensors).

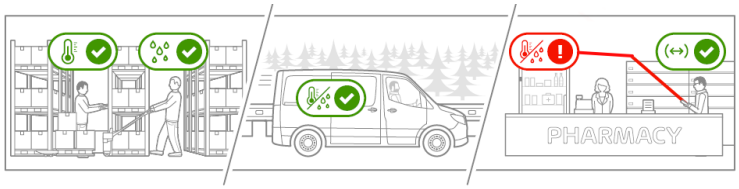
Each STE2 R2 package includes a power supply and an external temperature sensor (3 meters long). Additional sensors and accessories can be purchased as needed.



Typical use case - monitoring constant temperature and humidity in refrigerators



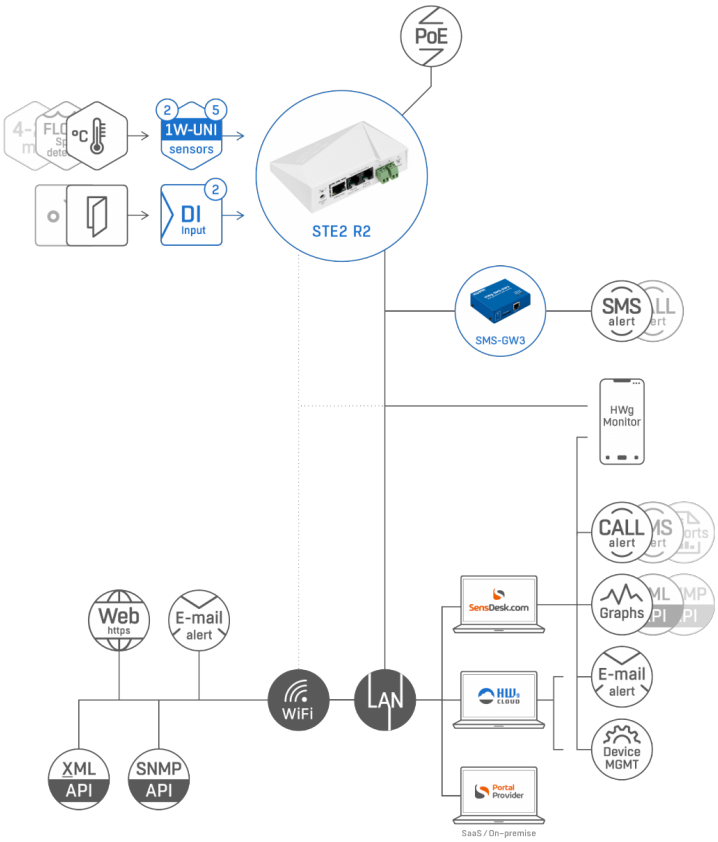
Pharmacies and medical companies are required to comply with standards and regulations. To ensure compliance, they must monitor the temperature in refrigerators and storage rooms where medicines and temperature-sensitive items are stored. However, hiring employees to monitor individual refrigerators and storage rooms is expensive and less reliable. This problem requires an appropriate and reliable monitoring service. The STE2 R2 measuring devices and the monitoring portal HWg-cloud.com offer a solution. This combination helps to set and monitor safe temperature, humidity and motion detection values for safe storage of medicines. It allows you to receive alerts when a problem occurs and provides reports on monitored values to confirm regulatory compliance.



Other potential applications include:



- HVAC monitoring - remote monitoring of air conditioning functionality ->temperature, humidity or separate water tank monitoring.
- Shops/Restaurants - remote monitoring of refrigerators or freezers ->power supply control and temperature stability.
- Heating Optimization ->short and long term temperature, humidity and dew point graphs in different building locations.
- Offices, schools, public spaces, government offices ->environmental quality and air quality control (temperature, humidity, CO2, VOC).
- Industrial switchboards ->long-term monitoring of AC and DC voltage and current + environmental monitoring (overheating, undercooling, humidity).



STE2 Lite - Simple Environmental Monitoring



STE2 Lite is a simple LAN and WiFi thermometer, hygrometer, and air quality monitor for remote monitoring of businesses, homes, or cottages. It can also be

very useful for checking environmental conditions in unoccupied homes or small warehouses. Do you need the ability to check the temperature, humidity or air quality in your basement, warehouse, garage, cottage or any room at any time? It's easy with STE2 LITE. You can also set monitoring levels, and when the temperature exceeds the specified range, an alert is sent via email to your smartphone. Using the external SMS-GW-LTE gateway, you can send alerts via SMS, make calls to older phones, or even establish a wireless connection to the HWg-cloud.com portal service (free for some initial applications and basic features).

Although STE2 Lite has only one RJ11 connector, it can measure up to 4 values of different parameters depending on the type of connected sensor (in addition to temperature, it can measure e.g. %RH - relative humidity, CO2, VOC, electric voltage up to 230 V). In addition, some sensors provide several measured values simultaneously (e.g. °C + %RH = 2 values).

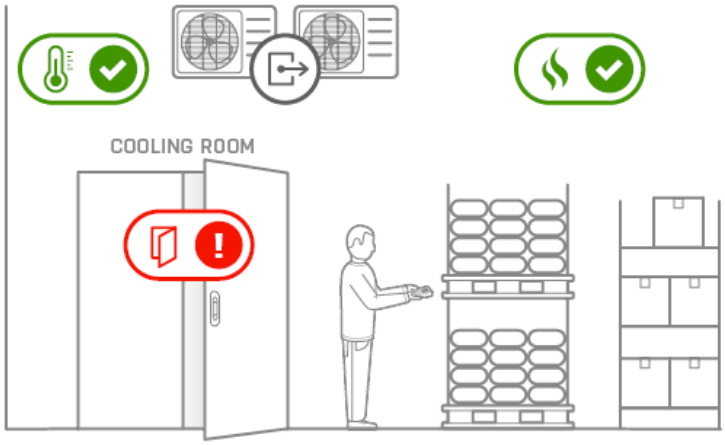
The basic STE2 Lite package includes a 5V international power supply and a temperature sensor with a 1m cable. Additional sensors can be purchased as needed.



Typical Use Case - Storage Conditions Monitoring



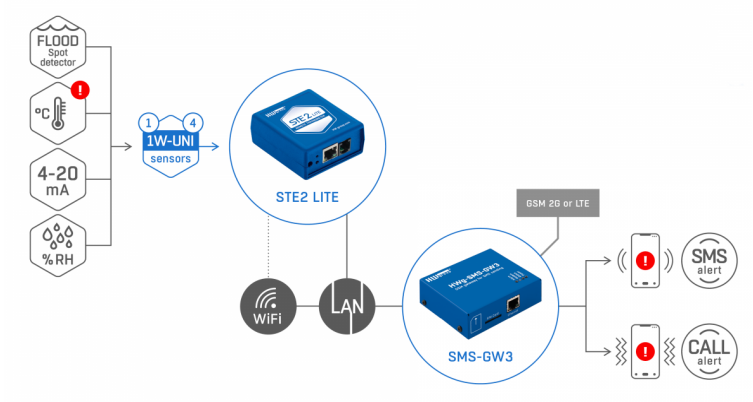
Warehouse operators need an effective and reliable way to monitor temperature and humidity in their storage facilities (refrigerators, freezers, warehouses - archives, cellars, technical rooms) and also in vehicles (both refrigerated and standard). Thanks to the STE2 Lite box, you can ensure that your cargo is stored in the right conditions in your warehouse or during transportation in a vehicle. You can monitor temperature, humidity, water leaks, digital inputs, voltage, current, power consumption and more. You can remotely control the technology via outputs. Configuration is quick and easy, and our sensors can provide data via Ethernet, WiFi, GPRS, or LTE. In the event of overheating, you can remotely control your air conditioning and adjust the temperature to the desired levels to keep storage areas safe and compliant.



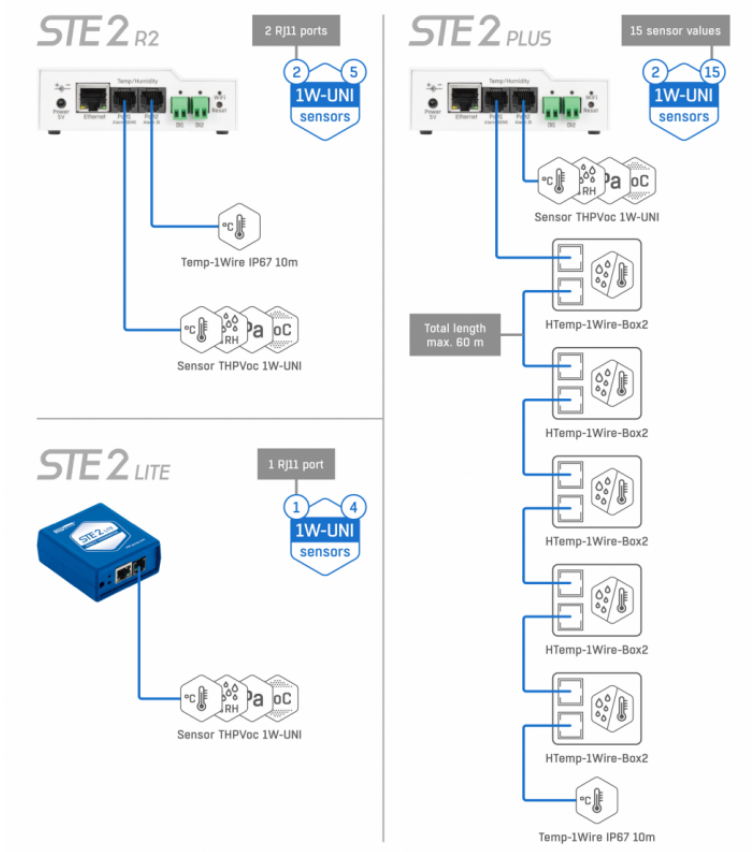
Other possible use cases:

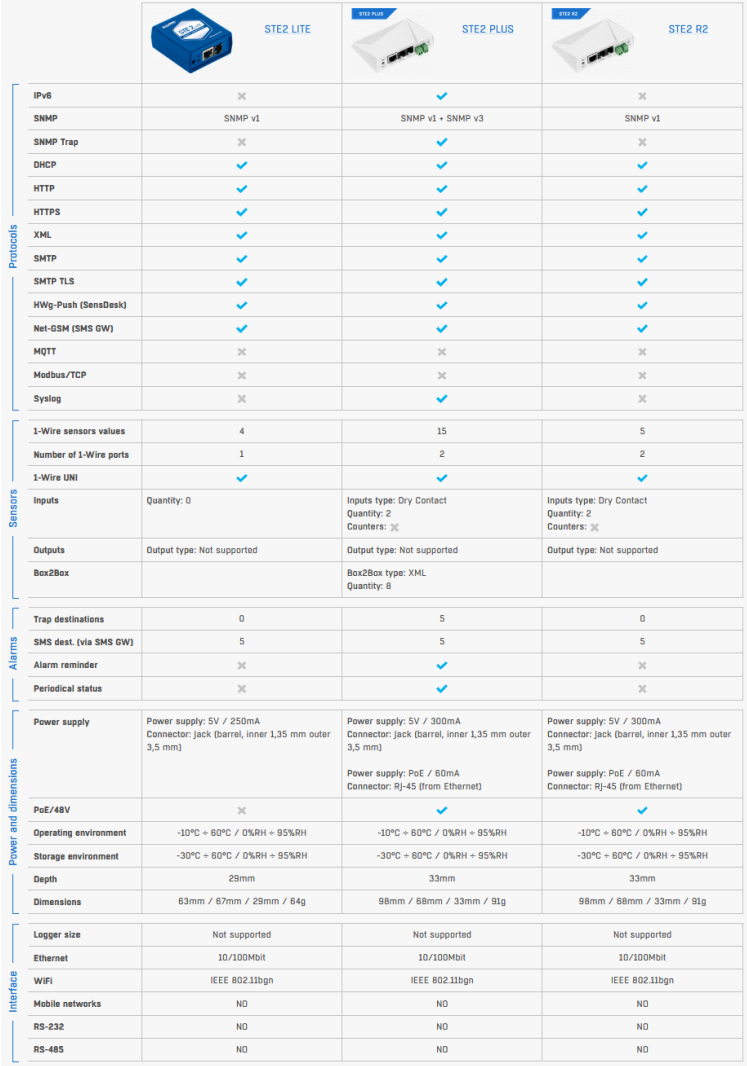


- Air conditioner temperature monitoring ->temperature alarm sensor (server temperature monitoring, air conditioner malfunction alarm).
- Monitoring conditions in nurseries and greenhouses ->temperature, humidity, lighting control.
- Simple environmental monitoring in distribution panels ->local distribution panels in offices, family homes and apartment buildings, etc.
- Overheating control of various computers and devices ->local computers in offices or workplaces.
- Offices, schools, public places, government offices ->environmental and air quality control (temperature, humidity, CO2, VOC).



Comparison of STE2 versions Plus / R2 / Lite





		STE2 LITE	STE2 PLUS	STE2 R2
Protocols	IPv6	✗	✓	✗
	SNMP	SNMP v1	SNMP v1 + SNMP v3	SNMP v1
	SNMP Trap	✗	✓	✗
	DHCP	✓	✓	✓
	HTTP	✓	✓	✓
	HTTPS	✓	✓	✓
	XML	✓	✓	✓
	SMTP	✓	✓	✓
	SMTP TLS	✓	✓	✓
	HWg-Push (SensDesk)	✓	✓	✓
	Net-GSM (SMS GW)	✓	✓	✓
	MQTT	✗	✗	✗
	Modbus/TCP	✗	✗	✗
	Syslog	✗	✓	✗
Sensors	1-Wire sensors values	4	15	5
	Number of 1-Wire ports	1	2	2
	1-Wire UNI	✓	✓	✓
	Inputs	Quantity: 0	Inputs type: Dry Contact Quantity: 2 Counters: ✗	Inputs type: Dry Contact Quantity: 2 Counters: ✗
	Outputs	Output type: Not supported	Output type: Not supported	Output type: Not supported
	Box2Box		Box2Box type: XML Quantity: 8	
Alarms	Trap destinations	0	5	0
	SMS dest. (via SMS GW)	5	5	5
	Alarm reminder	✗	✓	✗
	Periodical status	✗	✓	✗
Power and dimensions	Power supply	Power supply: 5V / 250mA Connector: jack (barrel, inner 1,35 mm outer 3,5 mm)	Power supply: 5V / 300mA Connector: jack (barrel, inner 1,35 mm outer 3,5 mm) Power supply: PoE / 60mA Connector: RJ-45 (from Ethernet)	Power supply: 5V / 300mA Connector: jack (barrel, inner 1,35 mm outer 3,5 mm) Power supply: PoE / 60mA Connector: RJ-45 (from Ethernet)
	PoE/48V	✗	✓	✓
	Operating environment	-10°C ÷ 60°C / 0%RH ÷ 95%RH	-10°C ÷ 60°C / 0%RH ÷ 95%RH	-10°C ÷ 60°C / 0%RH ÷ 95%RH
	Storage environment	-30°C ÷ 60°C / 0%RH ÷ 95%RH	-30°C ÷ 60°C / 0%RH ÷ 95%RH	-30°C ÷ 60°C / 0%RH ÷ 95%RH
	Depth	29mm	33mm	33mm
	Dimensions	63mm / 67mm / 29mm / 64g	98mm / 68mm / 33mm / 91g	98mm / 68mm / 33mm / 91g
Interface	Logger size	Not supported	Not supported	Not supported
	Ethernet	10/100Mbit	10/100Mbit	10/100Mbit
	WiFi	IEEE 802.11bgn	IEEE 802.11bgn	IEEE 802.11bgn
	Mobile networks	NO	NO	NO
	RS-232	NO	NO	NO
	RS-485	NO	NO	NO

Complementary sensors and detectors for STE2

1-Wire sensors:

- Temp-1Wire IP67 (1m, 3m, 10m)
- Temp-1Wire-Flat 3m
- Temp-1Wire Rack 19
- Temp-1Wire-Outdoor 3m
- Temp HomeBox
- Temp-1Wire Pt100 Frost
- Temp-1Wire Pt100
- Humid-1Wire (1m, 3m, 10m)
- HTemp-1Wire 3m
- HTemp-1Wire Rack 19
- HTemp HomeBox
- HTemp-1-Wire Outdoor

1-Wire UNI sensors for additional measurements or input expansion:

- Flood detector 1W-UNI 3m: Spot detection
- Sensor WLD Relay 1W-UNI: Water Leak Detector
- 30A AC Current probe 1W-UNI 2: Sensor for indirect single-phase measurement of AC current up to 30A without cutting the wire
- 30A DC Current probe 1W-UNI
- 100A DC Current probe 1W-UNI
- Sensor 230V AC 1W-UNI
- Sensor 0-20mA 1W-UNI: Isolated DC current sensor for the 1Wire-UNI bus
- Sensor 4-20mA 1W-UNI: Isolated converter for external DC current probes
- Light 1Wire-UNI
- Sensor THPVoc 1W-UNI: Combined sensor of 4 quantities in 4x4 cm indoor box. RJ11 interface (1-Wire UNI bus)
- Sensor CO2 1W-UNI: Combined Temperature, Relative Humidity and CO2 sensor in one box
- Expander 4xDI 1W-UNI

Conclusion

The HWg STE2 series offers a flexible solution for monitoring various environmental parameters in a wide range of applications. Whether you need professional monitoring with extensive sensor support (STE2 PLUS), reliable remote temperature and environmental monitoring (STE2 R2), or simple environmental monitoring for basic temperature, humidity, and air quality checks (STE2 LITE), there's a device to meet your needs. These devices can help you maintain desired environmental conditions, prevent potential problems, and provide peace of mind with remote monitoring and alerting capabilities.

If you're interested in the STE2 family device, please contact a dedicated distributor in your country.

Links:

- STE2 Plus
- STE2 R2
- STE2 LITE