

1. Description.

The **WSA02R1** and the **WSA02R4** are actuators with one or four relay input channels fully manageable in wireless mode to command up to 8A charges, so, suitable for centralized management of different thermal adjustment rings.



Picture 1 - Product Image

Thanks to wireless mode, relay's status can be read, and commands can be issued remotely.

Setting up proper configuration parameters for each channel, relay's behaviour in case of offline condition can be defined:

- OPEN → set the relay in "OPEN" status
- CLOSE → set the relay in "CLOSED" status
- NULL → keep the relay at the current status

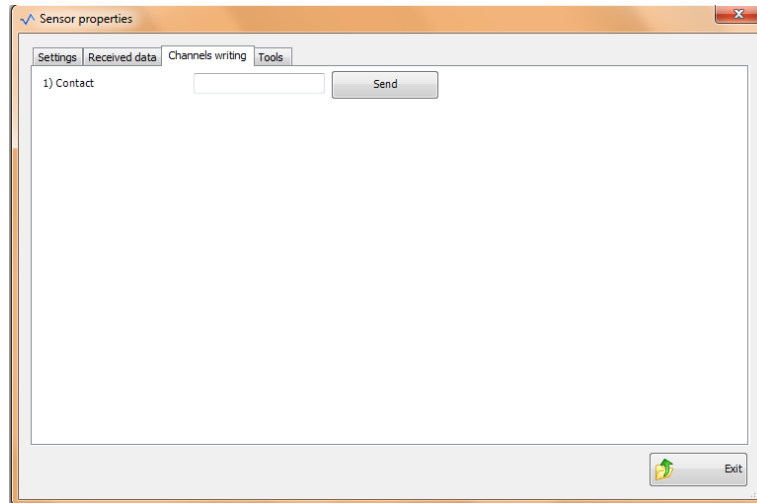
There are two available versions (*to be defined during order*):

- **WSA02R1** → Actuator 250VAc max – 8A one single pole, double throw relay output;
- **WSA02R4** → Actuator 250VAc max – 8A one single pole, double throw relay output and three single pole, single throw relays output;

2. Configuration.

Depending by model, some configurations related to installation and use are needed.

- **WSA02R1**
The 250VAc max – 8A one single pole, double throw relay can be controlled by ModBus with following logic:
 - 62nn: Channel 1, where "nn" is actuator's ModBus index (*refer to "WineCap - PLC ModBus technical specifications" manual*) otherwise, can be directly controlled using **WineCapManager** software:
 - channel writing involves the immediate command actuation ("0"=open contact, "1"=closed contact);
 - channel reading returns the last issued command and therefore the contact status;
 - **datalogger** normal functions are however maintained.



Picture 2 - WSA02R1 - Relay channel configuration

- **WSA02R4**

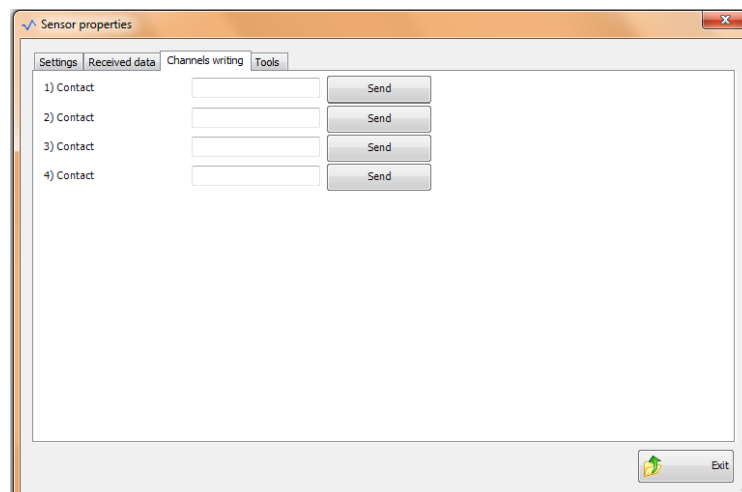
The 250VAc max – 8A one single pole relay and the three single pole, single throw relays can be controlled by ModBus with following logics:

- 62nn: Channel 1, where “nn” is actuator’s ModBus index (refer to “WineCap - PLC ModBus technical specifications” manual)
- 64nn: Channel 2, where “nn” is actuator’s ModBus index (refer to “WineCap - PLC ModBus technical specifications” manual)
- 66nn: Channel 3, where “nn” is actuator’s ModBus index (refer to “WineCap - PLC ModBus technical specifications” manual)
- 68nn: Channel 4, where “nn” is actuator’s ModBus index (refer to “WineCap - PLC ModBus technical specifications” manual)

Channel 1 is the single pole relay whereas channels from 2 to 4 corresponds to single pole, single throw relays.

In the same way can be controlled using **WineCapManager** software:

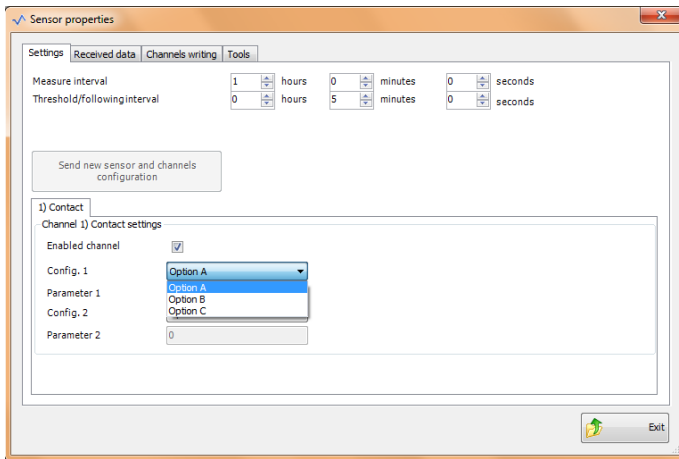
- channel writing involves the immediate command actuation (“0”=open contact, “1”=closed contact);
- channel reading returns the last issued command and therefore the contact status;
- **datalogger** normal functions are however maintained.



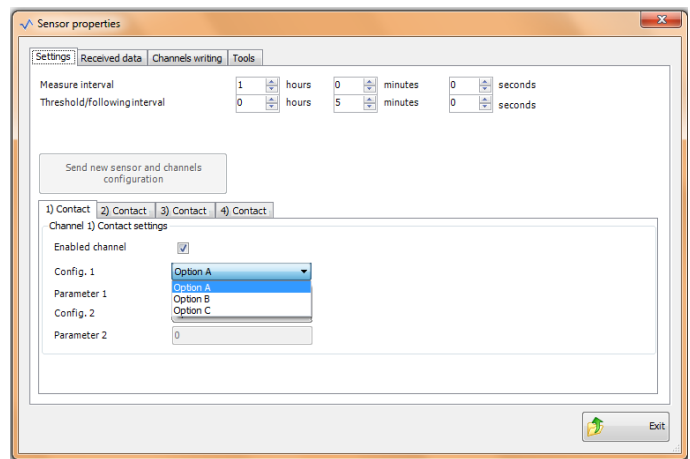
Picture 3 - WSA02R4 - Relay channels configuration

NOTE:

- in case ModBus writing occurs on more than one register simultaneously, the effective actuation will be done in sequential mode related to transmission/reception times between **basestation** and field actuators;
- in case an actuator doesn't receive a correct command and, consequently, the action requested is not performed, the same command will be automatically resent from **basestation** to **actuator** until execution confirmation will be received.
- in case of "FACTORY RESET" (5+5 command –refer to command table) all relays are in open status and channel values are set to "0";
- in case **actuator** lose connection with enrolled **basestation** (wireless network offline condition), each relay is controlled according to "config 1" parameter value ("Sensor Properties" → "Settings" → "Contact") related channel option as follow:
 - Option A: relay maintain previous status
 - Option B: relay opens
 - Option C: relay closes



Picture 4 - Relay status parameter



Picture 5 - Relays status parameter

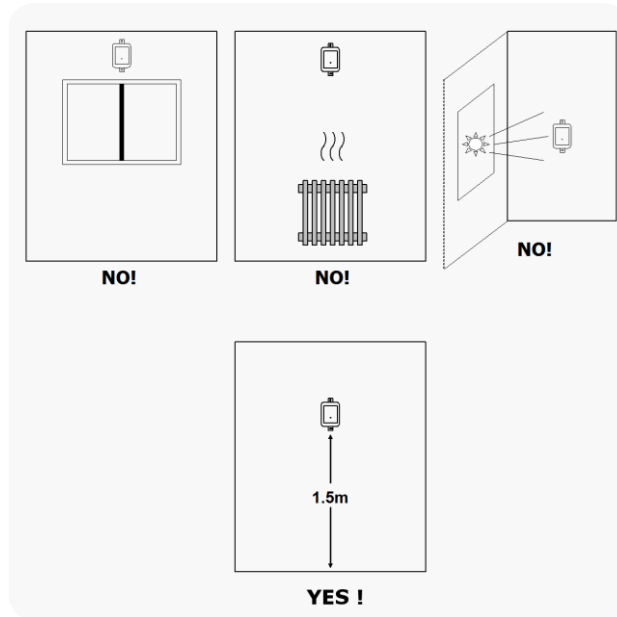
In these conditions, channel written value by radio doesn't change and is restored when node returns in the network.

3. Device pre-set and use mode.

a. Wireless Mode:

No setup operation is needed. Typically, the system is configured from factory, so the device is already associated to the system **basestation**. The device is in *STANDBY* mode (refer to [Picture 9 - Status table - Radio signal quality](#)) for which is necessary to start it with the *TEST* command (refer to [6 - Installation procedure](#)).

Otherwise, in case the device is in *FACTORY RESET* mode (refer to [Picture 9 - Status table - Radio signal quality](#)), that means it's ready for connecting to an existing system, in order to associate it, make reference to the "[WineCap System - User Manual R30](#)" software manual. Is necessary to use the "[WineCapManager](#)" software on the PC connected to the **basestation** that will be coupled with the device.

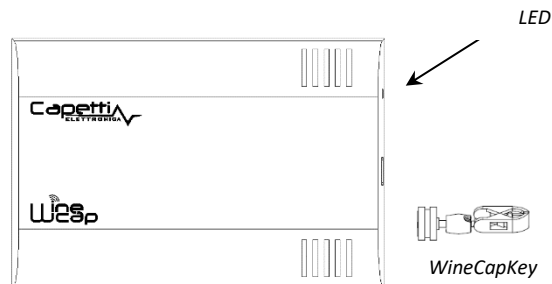


Picture 6 - Device positioning

4. Wireless device user interface.

The user interface consists of a “virtual” button that can be activated using the [WineCapKey](#) and of a two-colors led.


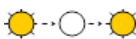

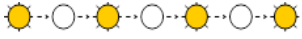
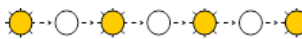


To give a command, user must approach the [WineCapKey](#) to the device’s sensible area and keep it in that position.; the following picture ([Picture 7 - WineCapKey positioning](#)) shows device’s sensible points.



Picture 7 - WineCapKey positioning



The following **COMMAND** table describes the available commands:

Flash count	Command	Description
1 flash 	STATUS	Shows the device STATUS. As answer the led perform a flash sequence as reported in the "STATUS" table. If the device is performing the TEST (refer to TEST command) this command stops it.
2 flashes 	TEST	Enter in TEST mode and transmits status and measurements every 5 seconds. If the device is in STANDBY mode or it is out of radio range, this command forces the connection procedure to the WSN and the return to the operative mode. The TEST stops after 120 seconds. During TEST, the led continuously shows the STATUS to monitor the received radio signal quality. CAUTION: Measures acquired during TEST phase are NOT saved.
3 flashes 	ENROLL	Association to the network: must be used when the device has not yet been included in a network, starts the entry and association procedure to the basestation (refer to "WineCap System - User Manual R30").
4 flashes  + 4 flashes 	STANDBY	Temporary device deactivation: the device is stopped. The sampling process and the radio are/is turned off losing the connection to the network. To reactivate, a TEST command is necessary. The STANDBY command must be given twice to confirm it: at the first sequence the led flashes alternating RED and GREEN lights, waiting for the second confirm sequence within 15 seconds. At the command execution the led flashes as the STANDBY status (refer to "WIRELESS MODE STATUS Table").
5 flashes  + 5 flashes 	FACTORY RESET	The device performs the memory deleting procedure and goes in STOP status. All samples, configuration and wireless network data associated are LOST. To reactivate the device a new association and configuration procedure is necessary (ENROLL command). Also in this case, the FACTORY RESET command must be given twice to confirm it. At the command execution the led flashes as the "PROBE/DATALOGGER NOT ASSOCIATED" status refer to "WIRELESS MODE STATUS Table").

Picture 8 - Commands table

5. Enrolling the device.

Not necessary if performed in factory before delivery.

Enroll the device to the network referring to the "WineCap System - User Manual R30". In case the device is already enrolled but in STANDBY status, a TEST command must be issued (refer to Picture 8 - Commands table).

6. Installation procedure.

After installing the **basestation** in appropriate place in charge, (refer to "WineCap System - User Manual R30"), be sure that the device is enrolled to the **basestation** and activated.

Head for the environment to be monitored. On the way, to check the quality of the radio coverage, use the "Field Measurer" function.

This function is activated issuing the TEST (refer to Picture 8 - Commands table) command: position the WineCapKey in the spot indicated in Picture 7 - WineCapKey positioning and wait for two AMBER flashes, then remove the WineCapKey from device. The "Field Measurer" function lasts enabled for two minutes.

To issue commands to the device, place the WineCapKey where indicated.


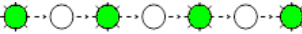

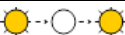




Once the WineCapKey is detected, the led periodically emits AMBER flashes with a 2 second cadence.

For each flash, a different command is associated; to confirm the command the WineCapKey must be removed from the sensible area immediately after the number of flashes corresponding at the desired command. The TEST corresponds to the second pulse and activate the "Field Measurer" function.



The device will give back the radio signal quality through led flashes:

WIRELESS MODE STATUS Table

Flash count - Wireless mode	Status/Radio signal quality
 5 green flashes	Excellent
 4 green flashes	Good
 3 green flashes	Fair
 2 amber flashes	Sufficient
 1 red flash	Insufficient
 1 red flash 2" long	OUT OF RANGE Network searching
 2 red flashes 2" long	STANDBY
 Short-long-short red flashes series	FACTORY RESET Device not enrolled

Picture 9 - Status table - Radio signal quality

Optimize reception selecting the best position: small movements can help.

If the signal is absent or insufficient at the install point, a *WR12 repeater* should be put between (refer to "*WineCap System - User Manual R30*"). The *WR12 repeater* itself must be in a position where the signal level is at least sufficient.

The network will reconfigure itself automatically; the signal will be good again when the device synchronizes with the *WR12 repeater*.

The link will not be reconfigured until completely lost by the device. Because of this, in some cases it could be necessary to force the operation. In such cases, put the device in *STANDBY* mode, then run the *TEST* again (refer to "*WineCap System - User Manual R30*").

NOTE: The display equipped **datalogger** (*WD04T*) is recommended, to verify the signal quality during devices installation.

7. Shutting off/Reactivating the device.

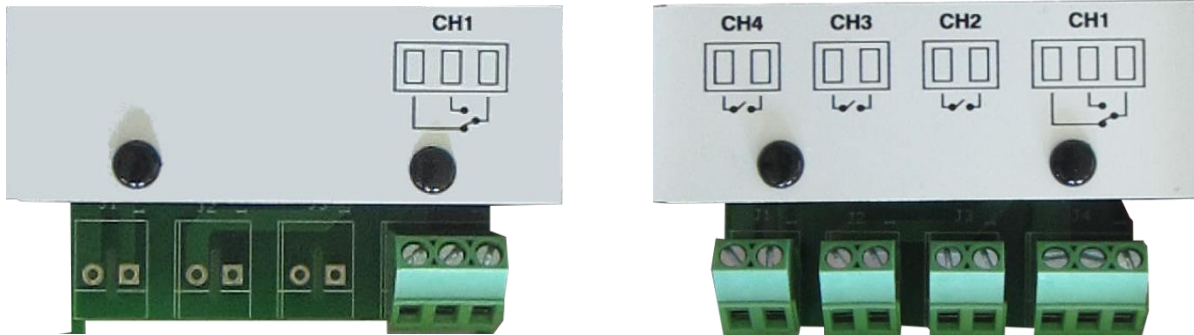
If the device is shut off and left unused for a long time, you can issue the *STANDBY* command (refer to *Picture 8 - Commands table*). It corresponds to the command number 4 and must be issued twice to confirm the operation.

Position the *WineCapKey* in the spot indicated in *Picture 7 - WineCapKey positioning* and wait for four *AMBER* flashes, then remove the *WineCapKey* from device.

Verify that the device asks for confirmation of *STANDBY* command with alternate *GREEN/RED* flashing, then position again the *WineCapKey* and wait for four flashes again. The device will confirm the *STANDBY* status lighting the *RED* led for 2 seconds twice.


To reactivate the device the *TEST* command must be issued.

8. Transducer's connection layout.



Picture 10 - Connection layout

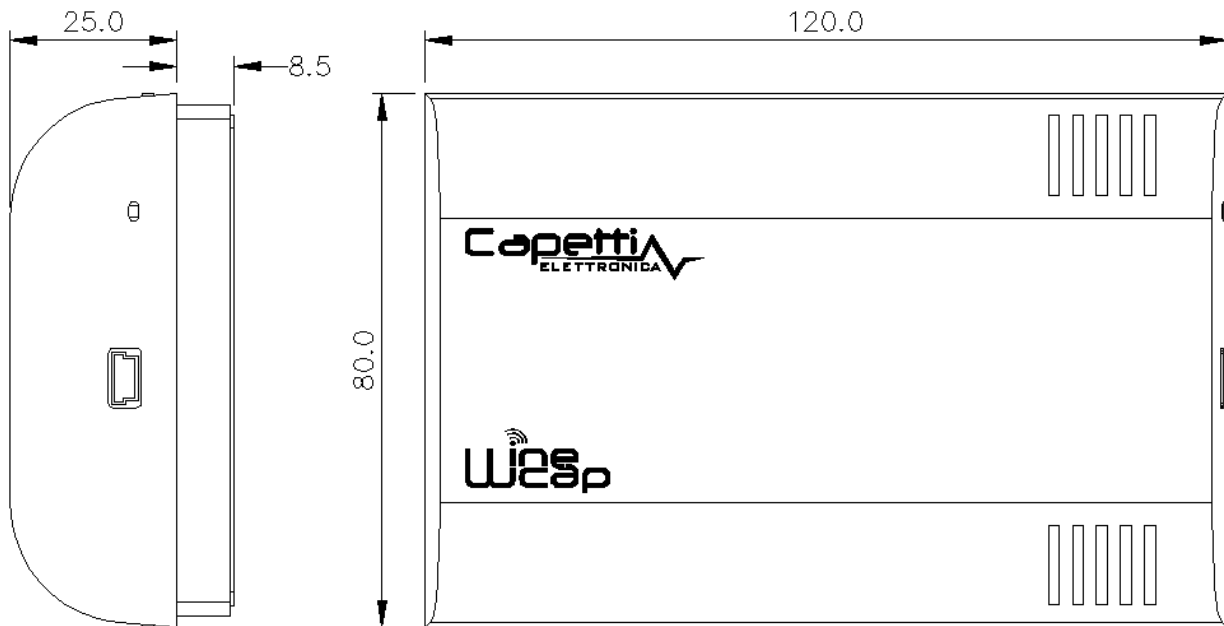
9. Technical Information.

Power supply	3.6Ah - 3.6V type "A" lithium internal battery
Battery life (*)	Up to 5years (radio signal quality at least sufficient)
Measures acquired (1 or 4 input channels)	Relay status
Sampling interval (*)	Selectable from one minute to 24 hours
Working temperature	<ul style="list-style-type: none"> Operative: -30°C ÷ +60°C Warehousing: -40°C ÷ +70°C
Radio frequency	ISM 868MHz
Radio coverage 	Up to 6Km in line of sight (can be extended using WR12 battery powered repeaters)
Sealing	IP30
Dimensions	120x80x33,5mm
Weight	150g
Case material	ABS
Mounting	<ul style="list-style-type: none"> Fix on 2 points 503 built-in box
Connections	Wireless, USB
Output status sample and transmission	Directly from/to enrolled basestation
WSA02R1 model (1 relay)	One single pole, double throw 250Vac 8A relay output (SPDT) fixed on a 3-way AWG 26÷14 5mm pitch terminal block
WSA02R4 model (4 relays)	<ul style="list-style-type: none"> One single pole, double throw 250Vac 8A relay output (SPDT) fixed on a 3-way AWG 26÷14 5mm pitch terminal block and Three single pole, single throw relays output (SPST) fixed on a 2-way AWG 26÷14 5mm pitch terminal block
Activation Delay	Depending by the wireless network complexity. Typically, few seconds.

* battery life may be influenced by fieldwork conditions, sampling interval and system configuration.

** radio coverage reachable using up to 32 [WR12 repeaters](#) (maximum 16 for each path) between the device and the basestation.

10. Mechanical dimensions.



Picture 11 - Mechanical dimensions

11. Reference standards.

EN 61010 -1

For electromagnetic compatibility

EN 61000 - 3 - 2

EN 61000 - 3 - 3

EN 300 220 -2

EN 301 489 - 03

EN 61000 - 6 -1

This symbol indicates that this product is compliant with the European Directive 2011/65/CE that restricts the use of substances in the manufacturing of electronic devices.



The "WEEE" logo on the label indicates that this product is compliant with the "WEEE" EC Directive. This symbol (valid only in the European Union countries) indicates that the product it is applied to, MUST NOT be discarded with ordinary household or industrial waste, but must be sent to an authorized reception point. The end user should contact the device provider, either the manufacturer or the reseller, to agree a collection and disposal process, after having checked the terms and conditions of sale.



IT190200000111

The features shown may be subject to change without notice.

