# WSD12T-AV2_5

*User Manual*

Capetti ELETTRONICA

WineapPro

# 1. Description.

The WSD12T-AV2_5 is a datalogger designed to measure 3 input channels to measure temperature (*NTC10K*), current (*4-20mAdc*) and voltage (*0-2.5Vdc*), with storage functionality of samples acquired, with storage functionality of samples acquired.

# 2. Device pre-set and use mode.


*Picture 1 - Product image*

## a. Wireless Mode:

No setup operation is needed. Typically, the system is configured in factory, so the device is already associated to the system gateway. The device is in **STANDBY** mode (*refer to Picture 3 - Command table*) for which is necessary to start it with the **TEST** command (*refer to 5 - Installation procedure.*).

Otherwise, in case the device is in **FACTORY RESET** mode (*refer to Picture 3 - Command table*), 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. It is necessary to use the *WineCapManager* software on the PC connected to the gateway that will be linked with the device.

## b. USB Logger Mode:

For this operation mode, stand-alone with data downloads through USB, the connection with the PC and the *WineCapManager* running on it is necessary to modify the device 's operation mode. The sampling interval must be set with the device in **STAND-ALONE** *(refer to 6 - Stand-alone USB datalogger installation.)* mode and automatically, the device 's clock is aligned with the PC's clock, in order to assure the temporal reference of the sample.

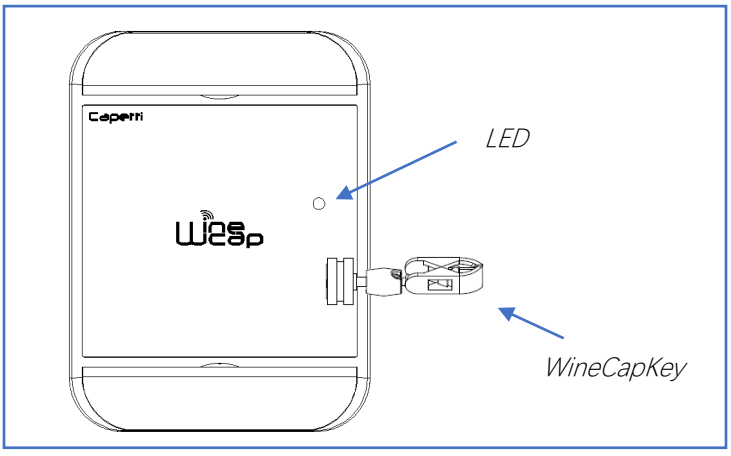
Sampling operations start may be selected disconnecting the USB cable or giving the proper command with the magnetic key (*refer to 6 - Stand-alone USB datalogger installation.*). More details on device 's connection/disconnection through the USB cable are available on the *WineCap System - User Manual R30* manual.

## c. On field transition from USB to Wireless datalogger:

This transition is practicable in field, during the sampling period, using the wireless network association command. When the association is done, the datalogger becomes a wireless datalogger and, besides sending new measures to the gateway, starts a download process towards the same gateway of the measures acquired during the stand-alone period (*refer to Picture 5 - Status table*).

# 3. Wireless device user interface.

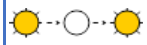
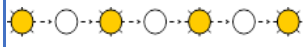
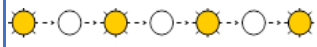
The user interface consists of a "virtual" button that can be activated using the *WineCapKey* and of a two-colours led.
To give a command, user must approach the *WineCapKey* to the device's sensible area and keep it in that position.; the following picture (*Picture 2 - WineCapKey positioning*) shows device's sensible points.




*Picture 2 - WineCapKey positioning*

The following COMMAND table describes the available commands:

**WIRELESS MODE COMMAND** table

| 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.<br>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 gateway (*refer to "WineCap System - User Manual R30"*). |
| 4 flashes  <br>+ 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 "Picture 4 - Status table – Wireless mode"*). |
| 5 flashes  <br>+ 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 (***ENROL** 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 "Picture 4 - Status table – Wireless mode"*). |
| 5 flashes  <br>+ 3 flashes  | LOGGER<br>NO WSN | As the previous command but performs only the WSN deleting procedure and disassociate from the gateway. The device enters in **LOGGER STAND ALONE** mode: data are kept, and the sampling activity **CONTINUES** with previous setup. Command must be given with 2 sequences: 5 flashes and then 3 flashes. At the command execution wait for the device reboot. At the STATUS command, "**LOGGER**" will be the answer (*refer to "Picture 5 - Status table - Stand-alone mode"*). A new association (***ENROL** command*) is possible to a new gateway. |

*Picture 3 - Command table*

# 4. Device enrolment.

Not necessary if performed in factory before delivery.

Enrol 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 3 - Command table*).

# 5. Installation procedure.

After installing the gateway in appropriate place in charge, (*refer to "WineCap System - User Manual R30"*), be sure that the device is enrolled to the gateway 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 3 - Command table)* command: position the *WineCapKey* in the spot indicated in *Picture 2 - WineCapKey positioning* and wait for two AMBER flashes, then remove the *WineCapKey* from device. The "Field Measurer" function lasts enabled for two minutes.

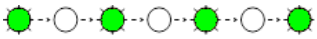
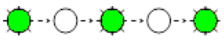
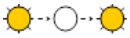
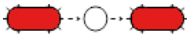
To issue commands to the device, place the *WineCapKey* where indicated.

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 | ACTIVE - Radio signal: Excellent |
|  | 4 green flashes | ACTIVE - Radio signal: Good |
|  | 3 green flashes | ACTIVE - Radio signal: Fair |
|  | 2 amber flashes | ACTIVE - Radio signal: Sufficient |
|  | 1 red flash | ACTIVE - Radio signal: Insufficient |
|  | 1 red flash 2" long | OUT OF RANGE<br>Network searching |
|  | 2 red flashes 2" long | STANDBY<br>Radio off - No Logging |
|  | Short-long-short red flashes series | FACTORY RESET<br>Device not enrolled – No logging |

*Picture 4 - Status table – Wireless mode*

Optimize reception selecting the best position: small movements can help.
If the signal is absent or insufficient at the install point, a *repeater WR12* should be put between (*refer to "WineCap System - User Manual R30"*). The *repeater WR12* 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 *repeater WR12*.

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.

# 6. Stand-alone USB datalogger installation.

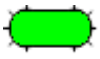
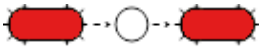
Install the datalogger in appropriate place.

If the sampling process has not yet been activated, you can start it through the *WineCapKey*.

Bring it closer to the sensitive point, wait for 2 flashes (***TEST***) *(refer to Picture 3 - Command table)* and remove. The datalogger begins sampling according to your settings through your PC.

Through the *WineCapKey* is possible to ask for the status, bring it close to the datalogger for 1 flash (***STATUS***) and remove it.

STAND-ALONE DEVICE - STATUS TABLE Table

| FLASH COUNT –STAND ALONE MODE | | STATUS |
|---|---|---|
|  | 1 green flash 2 seconds long | ACTIVE |
|  | 2 red flashes 2 seconds long | STANDBY |
|  | Sequence of red flashes: short, 2 seconds long, short | FACTORY RESET<br>INVALID datalogger clock!<br>PC connection required. |

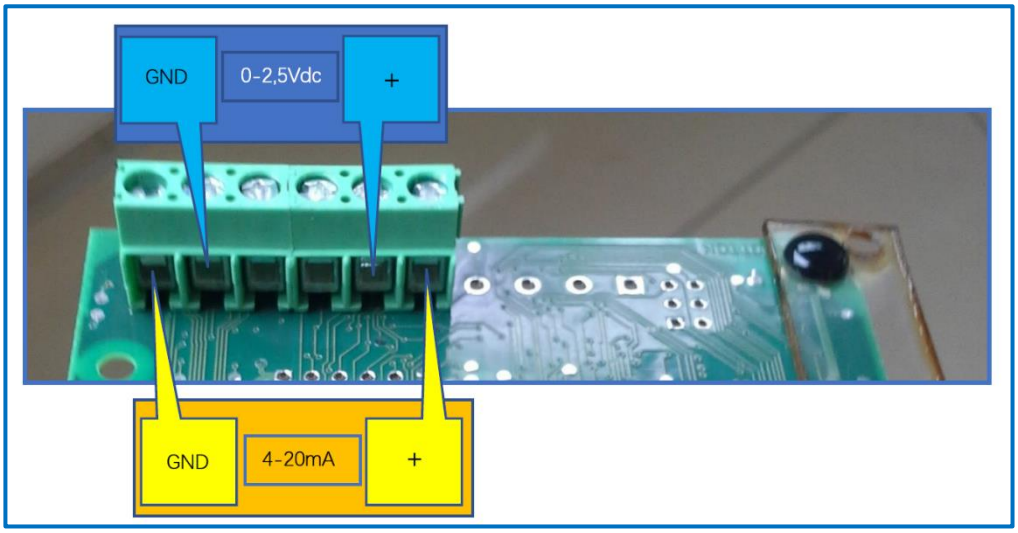
*Picture 5 - Status table - Stand-alone mode*

# 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 3 - Command 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 2 - 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.



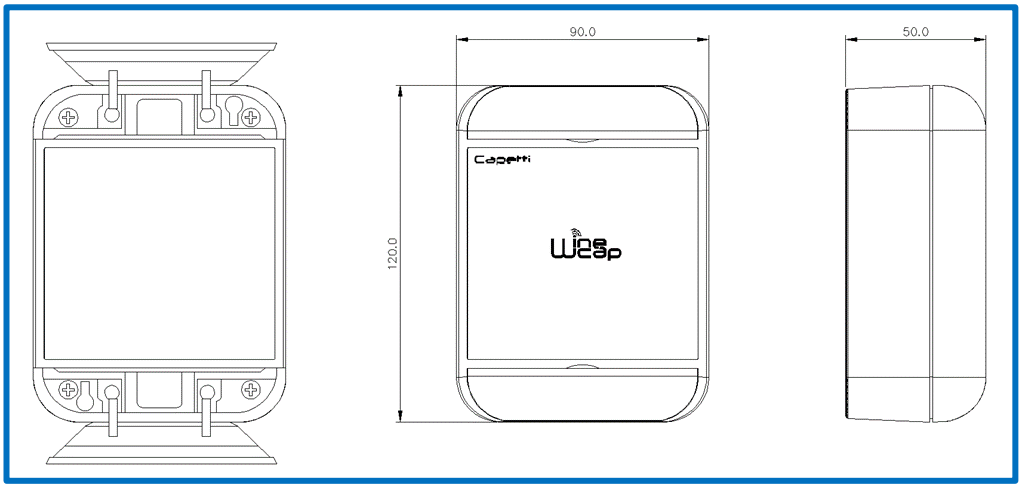

*Picture 6 - Connections layout*

# 9. Technical Information

| | |
|---|---|
| Power supply | 7.7Ah - 3.6 V type "C" lithium internal battery |
| Battery life (*) | Up to 5years<br>*(samples every 10 minutes and radio signal quality at least sufficient)* |
| Measures acquired *(3 input channels)* | • Temperature<br>• Current<br>• Voltage |
| Sampling interval *(*)* | Selectable from one minute to 24 hours *(Scegliere un elemento. minutes default)* |
| Datalogger capacity | 64,000 samples (*for each channel*) |
| Working temperature | • Operative: -30°C ÷ +60°C<br>• Warehousing: -40°C ÷ +70°C |
| Radio frequency | ISM 868MHz |
| Radio coverage | Up to 6Km in line of sight<br>*(can be extended using WR12 battery powered repeaters)* |
| Sealing | IP65 |
| Dimensions | 90x120x50mm |
| Weight | 350g |
| Case material | ABS |
| Mounting | Fix on 2/4 points |
| Connections | Wireless, USB |
| Cable external diameter | 4.7mm maximum |
| Copper wire section | 0.05 ÷ 2.5mm² / ÷ 14 AWG |
| Voltage - Measure range | 0–2.5Vdc |
| Voltage - Measure accuracy | 3mV |
| Voltage - Measure resolution | 1mV |
| Current - Measure range | 4-20mA |
| Current - Measure accuracy | 35µA |
| Current - Measure resolution | 7µA |
| Temperature - Transducer type | NTC 10K |
| Temperature - Measure range | -30°C ÷ +60°C |
| Temperature - Measure accuracy | ±0.2°C at 25°C |
| Temperature - Measure resolution | 0.01°C |

** battery life may be influenced by fieldwork conditions, sampling/measuring interval and system configuration.*
*** radio coverage can be extended using up to 32 WR12 repeaters (maximum 16 for each path) between the device and the basestation.*

# 10. Mechanical dimensions.




*Picture 7 - Mechanical dimensions*

# 11. Warnings.

- In case of batteries substitution, DO NOT disconnect the flat cable which connect the electronic boards without removing batteries before
- ALWAYS substitute all the batteries, also in case of one single battery exhausted
- Follow the manufacturer's suggested warm-up time (*time required to obtain a reliable measurement*) of the transducer.
- Follow the manufacturer's suggested electric wiring of the transducer to measure (*ground shields at a single point, cable length and section*); voltage measures on distances exceed 15/20 meters are subjected to electromagnetic disturbances. 0÷25mA inputs have a superior electromagnetic compatibility (*EMC*).
- Avoid passage in cavities with power or high voltage cables.
- The protection and safety measures and the warranty provided by the Manufacturer with the equipment may be compromised if it's used in a manner that does not comply with this user manual.
- This equipment complies with CE regulations.
- This equipment can receive any interference which could also cause unwanted behaviour.
- Modifications or tampering not expressly approved by the Manufacturer could void the user's authorization to operate the equipment.
- This equipment must be installed by qualified personnel.
- The device has a weight of up to 0.350 kg. Make sure that the object is properly fixed to supports/infrastructures capable of withstanding this load. Make sure proper methods and materials are used when fixing the equipment to a wall.
- Only service personnel authorized by the manufacturer or personnel expressly authorized by the latter can open the container. There are no user serviceable parts inside.

# 12. 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

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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.

RoHs
2011/65/CE

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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.

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