WineCap WSD10TCOPM Wireless Smart Datenlogger User Manual

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Contents

Description

The **WSD10TCOPM** is a datalogger with 4 input channels to acquire indoor temperature, CO2, PM2.5 particulate and PM10 particulate with storage functionality of samples acquired.

No periodic calibration cycles in fresh air are necessary to ensure the accuracy of the CO2 measurement.

The particulate transducer accuracies are validated by the MCERTS certification which also confirms the possibility of integration in applications compliant with the DIN EN 15267 European air quality standard.

Picture 1 – Product Image

Device pre-set and use mode.

a. Wireless Mode:

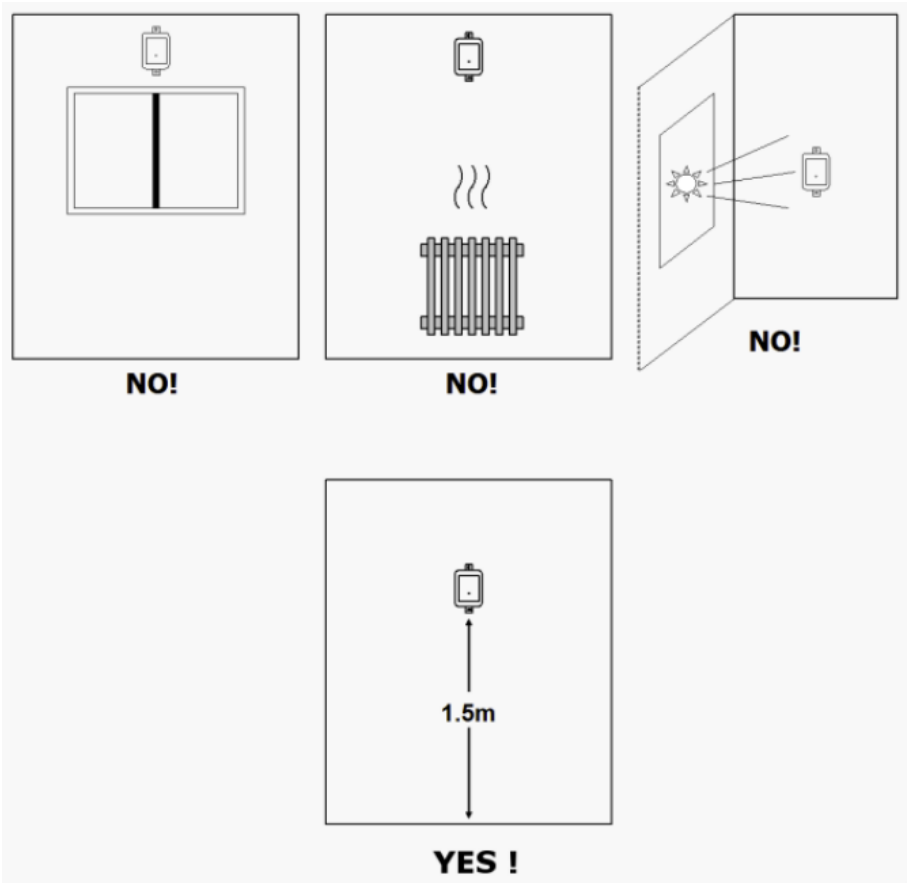
No setup operation is needed. Typically, the system is configured from factory, so the device is already associated to the system base station. The device is in STANDBY mode (refer to Picture 5 – Status table – Radio signal quality) for which is necessary to start it with the TEST command (refer to 5 – Installation procedure.). Otherwise, in case the device is in FACTORY RESET mode (refer to Picture 5 – 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 "Wine Cap System – User Manual R30" software manual. Is necessary to use the "Wine Cap Manager" software on the PC connected to the base station that will be coupled 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 "Wine Cap Manager" running on it is necessary in order 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 Stand-alone USB datalogger installation.). More details on device 's connection/disconnection through the USB cable are available on the Wine Cap 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 base station, starts a download process towards the same base station of the measures acquired during the stand-alone period (refer to Picture 6 – Stand-alone datalogger status).



Picture 2 – Device positioning

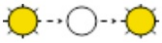
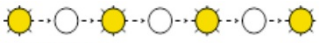
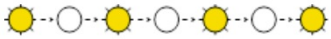
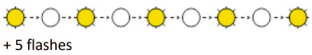
Wireless device user interface

The user interface consists of a “virtual” button that can be activated using the Wine Cap Key and of a two-colors led.

To give a command, user must approach the Wine Cap Key to the device’s sensible area and keep it in that position.; the following picture (Picture 3 – Wine Cap Key positioning) shows device’s sensible points.

Picture 3 – 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 reportedin 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 **base station** (*refer to “Winecups 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**”*).
5 flashes  + 3 flashes 	**LOGGER NO WSN**	As the previous command but performs only the WSN deleting procedure and disassociate from the **base station**. 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 “**STAND-ALONE MODE STATUS Table**”*). A new association (*ENROLL command*) is possible to a new **base station**.

Picture 4 – Commands table

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 4 – Commands table).

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.

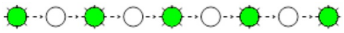
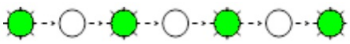
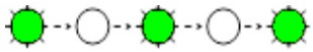
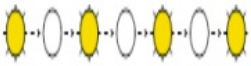
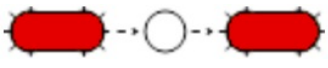
This function is activated issuing the TEST (refer to Picture 4 – Commands table)command: position the WineCapKey in the spot indicated in Picture 3 – WineCapKey positioning and wait for two AMBER flashes, then remove the WineCapKey from device. The “Field Measurer” function lasts enabled for two minutes.

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.

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 refl ates series	**FACTORY RESET Device not enrolled**

Picture 5 – 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.

Stand-alone USB datalogger installation.

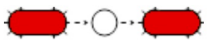
Install the datalogger in appropriate place.

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 4 – Commands table) and remove.

The datalogger begins sampling according to your settings through your PC.

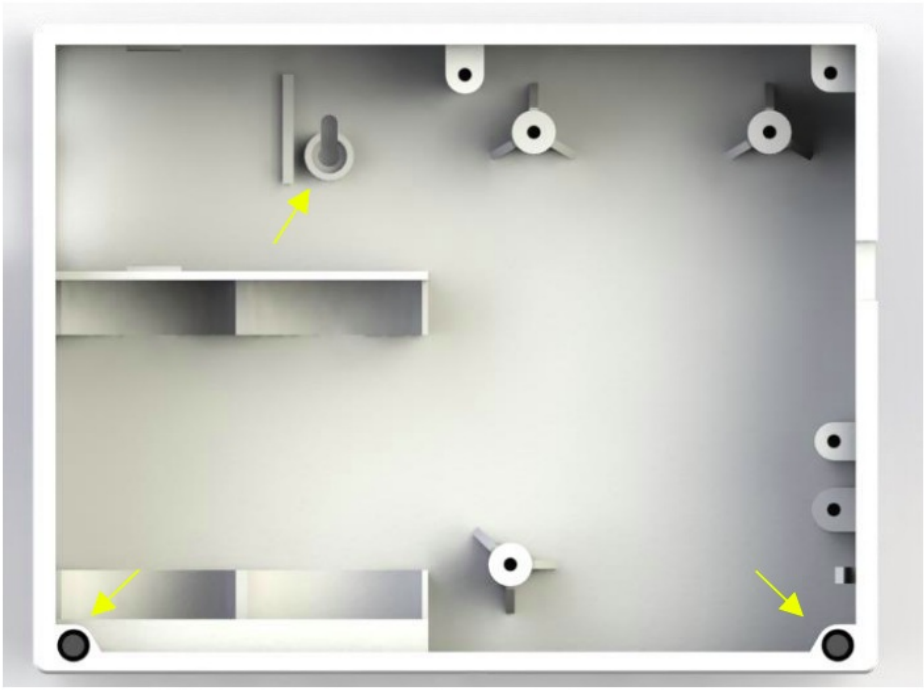
Through the WineCapKey is possible to ask for the status, bring it close to the datalogger for 1 flash (STATE) and remove it.

STAND-ALONE MODE STATUS 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 s econds long, short	FACTORY RESET**INVALID datalogger** clock!PC connection re quired

Case and fixing.

Install the device in the selected spot (4mm dowels):



Picture 1 – Fixing points.

To open the cover, unscrew the screw on top of the USB-C connector:

Picture 8 – Closing screw position.

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 4 – 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 3 – 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

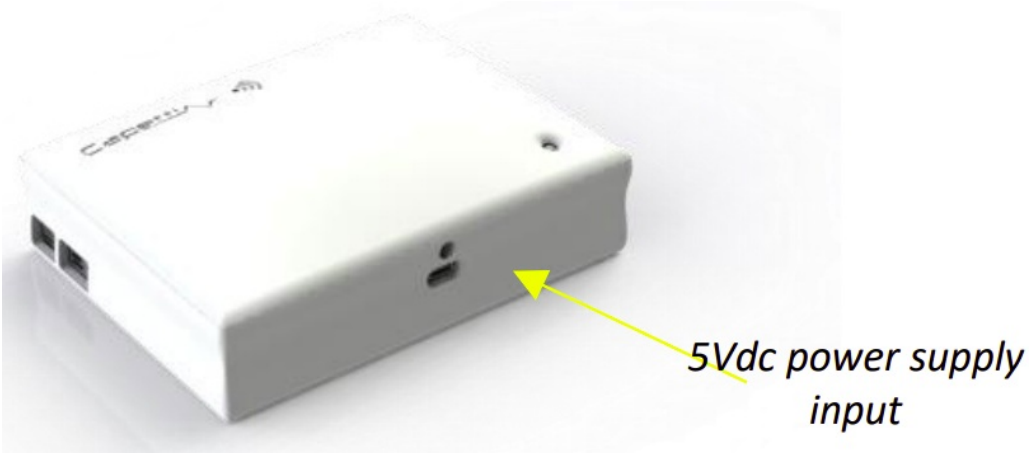
WineCapKey and wait for four flashes again. The device will confirm the STANDBY status lighting the RED led fo 2 seconds twice.

To reactivate the device the TEST command must be issued.

Auxiliary power supply.

The device can be powered using a common smartphone battery charger with following features:

- Voltage: 5Vdc
- Current: 1A
- Type C USB connector



Picture 2 –USB connector position

Technical Information

Power supply	• Double 19Ah – 3,6V type “D” lithium internal battery • Possibility of external power supply via USB-C input (*5Vdc 1A*)
Battery life (*) *(with radio signal quality at least s ufficient)*	• Up to 4 years – Sampling interval: 85 minutes • Up to 3 years – Sampling interval: 60 minutes • Up to 1.5 years – Sampling interval: 30 minutes· Up t o 9 months – Sampling interval: 15 minutes
Measures acquired*(4 input channels)*	• Indoor temperature • CO_2 • PM2.5 particulate • PM10 particulate
Sampling interval *(*)*	Selectable from one minute to 24 hours *(90 minutes defa ult)*

Datalogger capacity	64,000 samples (*for each channel*)
Working temperature	Operative: -10°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	155x120x50mm
Weight	500g
Case material	ABS
Mounting	Fix on 3 points
Connections	Wireless, USB
Indoor temperature – Transducer type	NTC10KΩ
Indoor temperature – Measure range	-10°C ÷ +60°C
Indoor temperature – Measure accuracy	±0.2°C in whole range
Indoor temperature – Measure resolution	0.01°C
CO2 – Measure fundamental	NDIR principle
CO2 – Measure range	5,000ppm
CO2 – Measure accuracy	< ±50ppm +3% of measure acquired
CO2 – Measure resolution	1ppm
CO2 – Compensations	Compensation of temperature and atmospheric pressure
CO2 – Calibrations	**No** calibration needed. Periods of fresh air presence are **NOT**required for auto-zeroing.
PM2.5 and PM10 particulate – Measure fundamental	Laser-based scattering
PM2.5 and PM10 particulate – Measure range	1 to 1,000µg/m3
PM2.5 and PM10 particulate – Measure accuracy	· ±10µg/m3@0 to 100µg/m3· ±10%@100 to 1,000µg/m3
PM2.5 and PM10 particulate – Measure resolution	1µg/m3
PM2.5 and PM10 particulate – Certifications	MCERTS

Mechanical dimensions.

Picture 7 – Mechanical dimensions

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

RoHs 2011/65/CE

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.

The features shown may be subject to change without notice.

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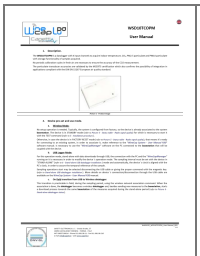
Documents / Resources

	WineCap WSD10TCOPM Wireless Smart Datenlogger [pdf] User Manual WSD10TCOPM Wireless Smart Datenlogger, WSD10TCOPM, Wireless Smart Datenlogger, Smart Datenlogger, Datenlogger

References

- Capetti Elettronica s.r.l.
- Prodotti - Capetti Elettronica s.r.l.
- Accessorio - WineCapManager Software - Configurazione sistema ed esportazione dati per PC con S.O. Windows™
- Datalogger - WD04T Tester radio
- Accessorio - WR12 Wireless Repeater
- Capetti Elettronica s.r.l.