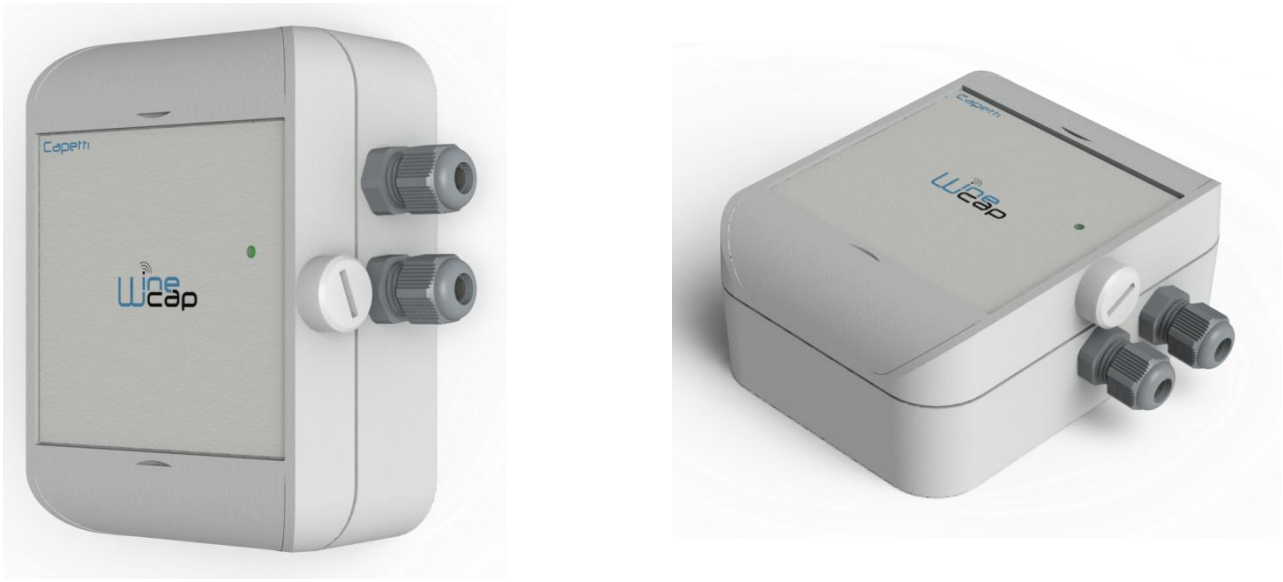
1. Description.

The **WSD12-VW** is a **datalogger** with 4 input channels to acquire frequency and temperature on vibrating wires, with storage functionality of samples acquired.



Picture 1 - Product Image

2. Datalogger preset and use mode.

- **Wireless Mode:**

  No setup operation is needed. Typically the system is configured from factory so the **datalogger** is already associated to the system **basestation**. The **datalogger** is in *STANDBY* mode for which is necessary to start it with the *TEST* command (*refers to chapter 3 - Wireless Installation*).

  Otherwise, in case the **datalogger** is in *FACTORY RESET* mode, that means it's ready for connecting to an existing system, in order to associate it, make reference to the "*WineCapManager*" software manual. Is necessary to use the "*WineCapManager*" software on the PC connected to the **basestation** that will be coupled with the **datalogger**.

- **USB Datalogger Mode:**

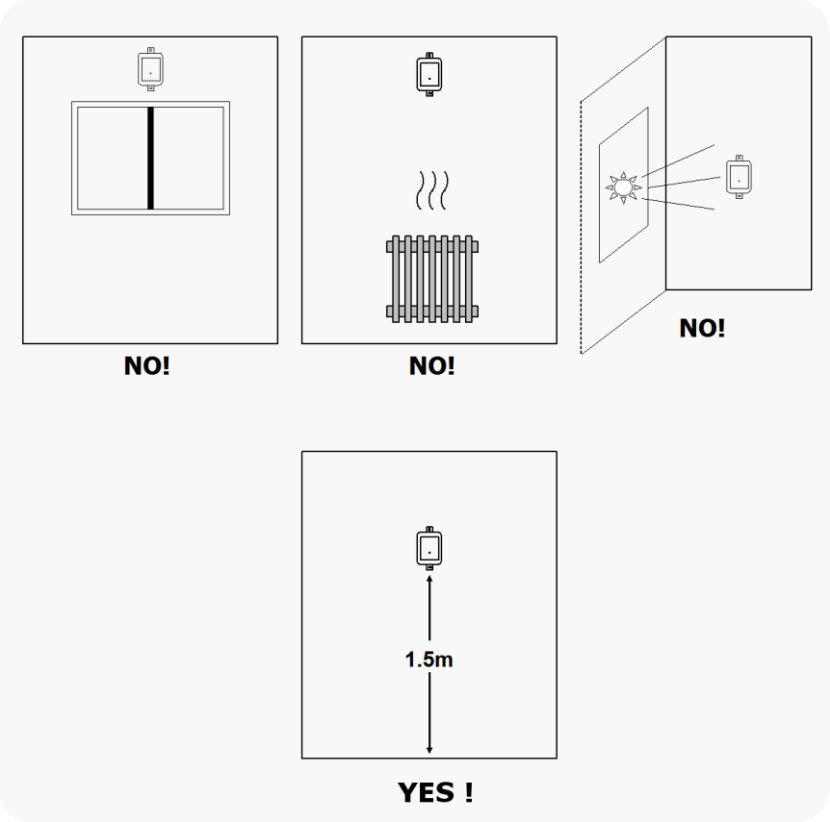
  For this operation mode, stand-alone with data downloads through USB, the connection with the PC and the "*WineCapManager*" running on it is necessary in order to modify the **datalogger**'s operation mode. The sampling interval must be set with the **datalogger** in "*STAND-ALONE*" mode and automatically, the **datalogger**'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. (*see chapter 4 - USB Logger Installation*). More details on **datalogger**'s connection/disconnection through the USB cable are available on the manual.

- **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 **basestation**, starts a download process towards the same **basestation** of the measures acquired during the stand alone period.

CAPETTI ELETTRONICA s.r.l. - Strada Stratta 57
10090 CASTIGLIONE TORINESE - TORINO - ITALY
VAT 04837130014 - Phone 011.981.98.11 - Fax 011.981.98.210
e-mail info@capetti.it - web www.capetti.it

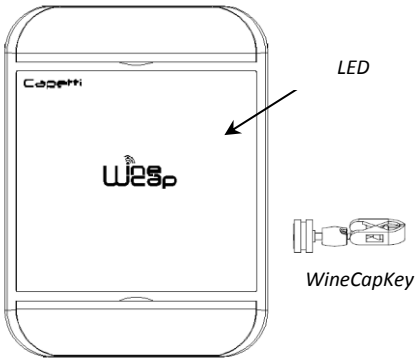


Picture 2 - Datalogger positioning

3. Wireless datalogger user interface.

The user interface consists of a "virtual" button that can be activated using the **WineCapKey** and of a two-coloured led.

To give a command, user must approach the **WineCapKey** to the **datalogger**'s sensible area and keep it in that position.; the following picture (*Pic. 3*) shows **datalogger**'s sensible points.



Picture 3 - WineCapKey positioning

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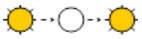
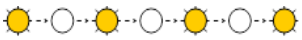
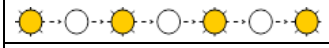
VAT 04837130014 - Phone 011.981.98.11 - Fax 011.981.98.210
e-mail info@capetti.it - web www.capetti.it

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**.
4 flashes  + 4 flashes 	**STANDBY**	Temporary device deactivation: the device is stopped. The sampling process and the radio are 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 "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 "DATALOGGER NOT ASSOCIATED" status (*refer to "STATUS" table*).
5 flashes  + 3 flashes 	**LOGGER NO WSN**	As the previous command but performs only the WSN deleting procedure and disassociate from the **basestation**. The device enter 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 "STATUS" table*). A new association (*ENROLL command*) is possible to a new **basestation**.

Picture 4 - Commands table

4. Enrolling the datalogger.

Enroll the **datalogger** to the network referring to the "**WineCapManager**" software manual. In case the **datalogger** is already enrolled but in *STANDBY* status, a *TEST* command must be issued.

5. Installation procedure.

After installing the **basestation** in appropriate place in charge, (*refer to the "WineCapManager User Manual"*), be sure that the **datalogger** 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* command: position the **WineCapKey** in the spot indicated in Picture (*Pic. 3*) and wait for two *AMBER* flashes, then remove the **WineCapKey** from **datalogger**. The "*Field Measurer*" function lasts enabled for two minutes.

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

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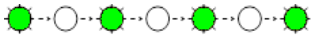
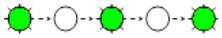
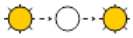
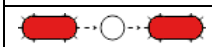
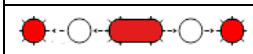
10090 CASTIGLIONE TORINESE - TORINO - ITALY
VAT 04837130014 - Phone 011.981.98.11 - Fax 011.981.98.210
e-mail info@capetti.it - web www.capetti.it

Once the **WineCapKey** is detected, the led periodically emits *AMBER* flashes with a 2 seconds 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 **datalogger** will give back the radio signal quality through led flashes:

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** **Datalogger 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 router** should be put between (*refer to "WineCapManager User Manual*). The **router** itself must be located 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 **datalogger** synchronizes with the **router**.

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

NOTE: The display equipped **datalogger** (***WD04T***) is recommended, as reading the signal quality is made easier with this model.

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***) and remove. The **datalogger** begins sampling according to your settings through your PC.

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

CAPETTI ELETTRONICA s.r.l. - Strada Stratta 57
10090 CASTIGLIONE TORINESE - TORINO - ITALY
VAT 04837130014 - Phone 011.981.98.11 - Fax 011.981.98.210
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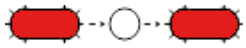
STATUS Table:

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 seconds long, short	FACTORY RESET **INVALID datalogger** clock! PC connection required

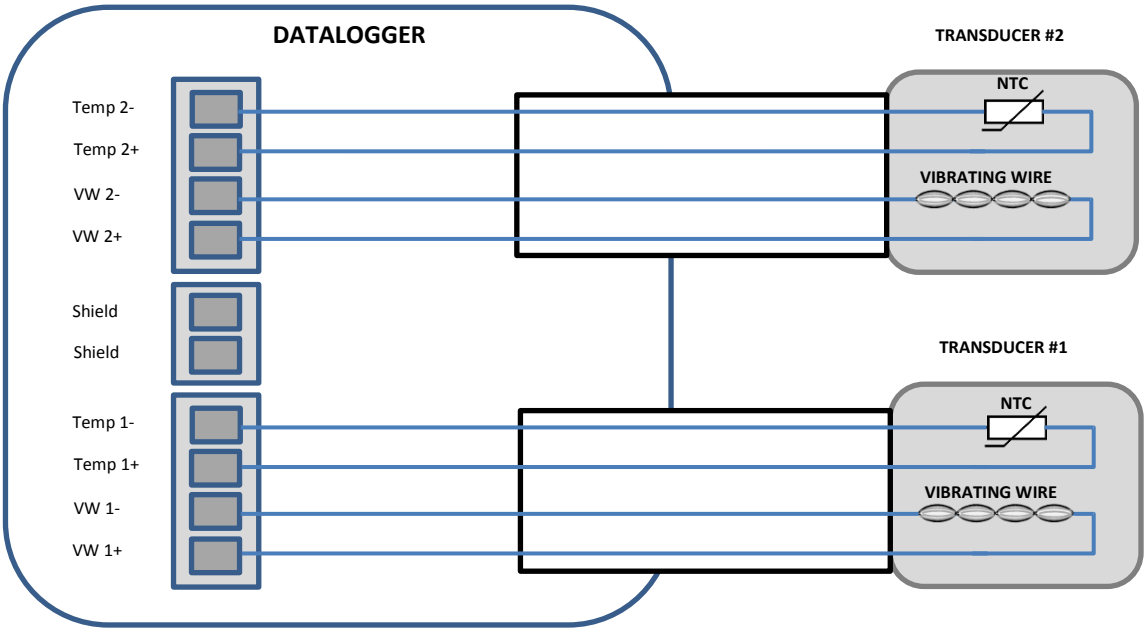
Picture 6 - Stand-alone datalogger status

7. Shutting off/Reactivating the datalogger.

If the device is shut off and left unused for a long time, you can issue the *STANDBY* command. Its corresponds to the command number 4 and must be issued twice to confirm the operation.

Position the **WineCapKey** in the spot indicated in Picture and wait for four *AMBER* flashes, then remove the **WineCapKey** from **datalogger**. Verify that the **datalogger** asks for confirmation of *STANDBY* command with alternate *GREEN/RED* flashing, then position again the **WineCapKey** and wait for four flashes again. The **datalogger** will confirm the *STANDBY* status lighting the *RED* led for 2 seconds twice. To reactivate the **datalogger** the *TEST* command must be issued.

8. Transducer's connection layout.



Picture 7 - Connections layout

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10090 CASTIGLIONE TORINESE - TORINO - ITALY
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e-mail info@capetti.it - web www.capetti.it

9. Technical Information.

Power supply	8.5A/h - 3.6V type "C" lithium internal battery
Battery life ***(*)***	Up to 4 years *(samples every 60 minutes and radio signal quality at least sufficient)*
Measures acquired (*4 channels*)	• Frequency • Temperature
Sampling interval ***(*)***	Selectable from one minute to 24 hours (*60 minutes default*)
Datalogger capacity	64,000 samples
Working temperature	• 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 routers*)
Sealing	IP65
Dimensions	90 x 120 x 50mm
Weight	350g
Case material	ABS
Mounting	Fix on 4 points
Connections	Wireless/USB
Frequency - Transducer type	Vibrating Wire
Frequency - Measure range	500 ÷ 4,000Hz
Frequency - Measure accuracy	± 50ppm
Frequency - Measure resolution	0.1µs / 0.1Hz
Temperature - Transducer type	NTC3KΩ
Temperature - Measure range	-20°C ÷ +70°C
Temperature - Measure accuracy	0.25°C at 25°C
Temperature - Measure resolution	0.01°C

**** battery life and sampling interval may be influenced by fieldwork conditions and system configuration.***
***** radio coverage reachable using up to 32 WR12 routers (maximum 16 for each path) between the datalogger and the basestation.***

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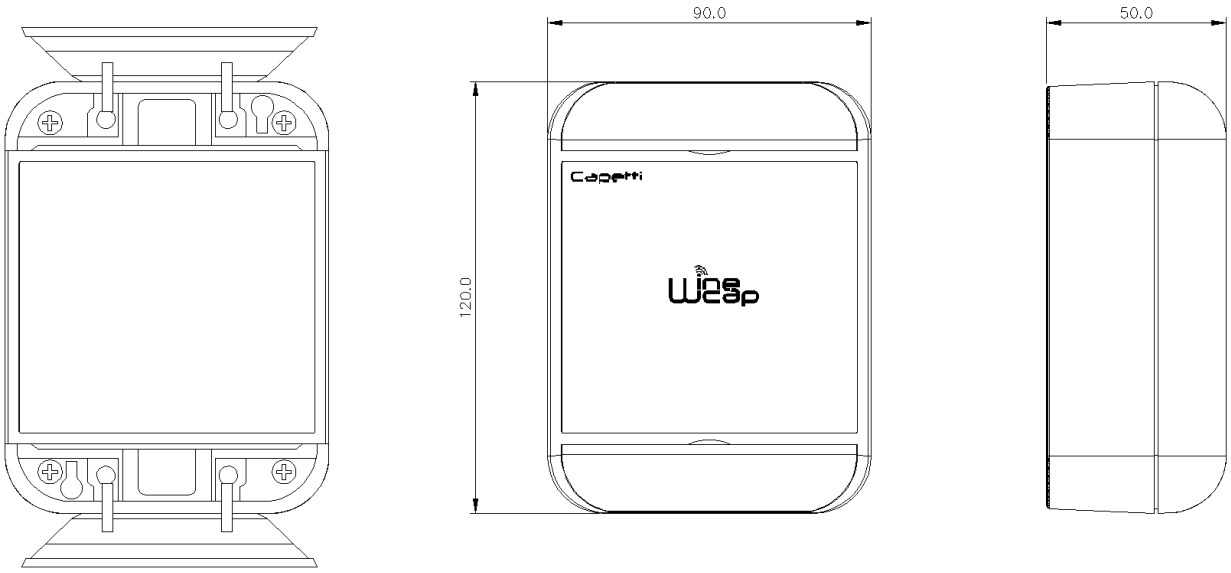
10090 CASTIGLIONE TORINESE - TORINO - ITALY
VAT 04837130014 - Phone 011.981.98.11 - Fax 011.981.98.210
e-mail info@capetti.it - web www.capetti.it

10. Mechanical dimensions.



Picture 8 - Mechanical dimensions

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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.

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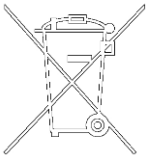

The features shown may be subject to change without notice.

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VAT 04837130014 - Phone 011.981.98.11 - Fax 011.981.98.210
e-mail info@capetti.it - web www.capetti.it