LevNet RF USB computer link  
Cat. No. WSCOM-03W

INSTALLATION AND QUICK START GUIDE

ENGLISH

WARNINGs AND CAUTIONs:
- Do not use this device with a larger antenna than provided or specified.
- Always ensure antenna is securely fastened for optimum performance.
- Performance of device can also be affected if used outside its temperature range.

DESCRIPTION:
The LevNet RF computer link (WSCOM) is a USB transceiver (transmitter and receiver) tool which is utilized for testing, monitoring, and commissioning in a LevNet RF or any EnOcean enabled to any PC/USB output systems (desktop, laptop, or notebook) and other USB host devices (tablets).

This tool works by receiving and transmitting at 315MHz using the EnOcean wireless protocol packets and allows connectivity to the world of EnOcean based wireless products. The WSCom tool works with EnOcean DolphinView Basic software for Windows® XP/7 to provide a visual environment for analyzing wireless radio messages (telegrams). With the provided antenna the device has the following operational receiving and transmitting distances:
- Line of site: Up to 250ft receiving and 200ft transmitting range.
- Line of sight outdoors: Up to 250ft receiving and 200ft transmitting range.
- Indoor drywall: Up to 1000 range, through max. 5 walls.
- Fire safety and Ferrocement walls /ceilings: Coverage is not guaranteed.

FEATUREs:
- Receive telegrams from EnOcean enabled devices including self-powered switches and sensors.
- Signal strength analysis (RSSI) of transmitted wireless telegrams.
- Send messages to control EnOcean enabled devices.
- Remote configuration of switches that support the Remote Management capability.
- Compatible with EnOcean’s DolphinView and other 3rd party software.
- Supports all message formats of EnOcean Equipment Profile (EEP) 2.1.
- Compatible with EnOcean Serial Protocol (EEP3).
- Offers programmable repeater (1/2 Level).

COMPATIBLE DEVICES:
- Any EnOcean Alliance enabled device which conforms to the EnOcean Equipment Profile (EEP) is compatible with the WSCom tool. This includes but is not limited to 3 & 5 wire relays, room controllers, thermostats, occupancy sensors, wall box receiver switches, uncovered switches, and light sensors made by Leviton as well as other EnOcean Alliance companies which support EEP 2.0 and above.

EQUIPMENT NEEDED FOR INSTALLATION:
- Desktop/laptop/notebook or similar USB Enabled Device.
- DolphinView Basic (minimum) or other Third Party Software.
- DolphinView Basic from Leviton: www.leviton.com/LevNetRF/DolphinViewBasic

INSTALLATION:
- This install guide concentrates on the usage of the WSCom tool with the EnOcean DolphinView Basic software package. DolphinView Basics allows for signal monitoring of transmitted wireless telegrams. In order to transmit telegrams or utilize Remote Management features the DolphinView Advanced or other third party software package will be required. See details at the bottom of this documentation for these other software options.
- Make sure the WSCom tool is not plugged into the PC.
- 1. Install DolphinView Basic from Leviton: www.leviton.com/LevNetRF/DolphinViewBasic
- 2. Install DolphinView Basic 3.2.1.0 or newer on your Windows® PC. Be sure to accept all selections: Uninstall previous DolphinView, Create desktop icon, and Update or install FTDI drivers version 2.08.02 (or newer).

TESTING:
- Restart your PC after installation is complete.
- 4. Plug in the LevNet RF USB computer link. When first plugging in the WSCom tool the red power LED will turn ON while the amber and green LED will blink twice at the same time. This signals the device has received power, booted up, and is working properly.
- 5. The WSCom Tool should automatically be detected by the Windows® XP/7 PC and any new drivers required will be installed.
- 6. It is important to allow Windows® to process this software. It is a process that can take up to 2 minutes. Both a USB Port Driver and USB Serial Port Driver will be installed.
- 7. When installation is complete, a manual install of the FTDI driver may be required. Refer to the troubleshooting section towards the end of this document for more details.

- 8. In the drop-down area next to Connect [F5] select the COM PORT that shows the “GATEWAYCTRL” device with the green check mark (figure 1).
- 9. Click on Connect [F5] and the DolphinView software will now be able to access the WSCom tool.

- Any 315MHz EnOcean telegram transmitted will appear in the Telegram Log at the bottom of screen.

- 10. Use an unused switch (WSSBD) or similar transmitter to verify EnOcean telegrams are being received and the WSCom tool is working properly.

DEVICE STATUS LED’S:
- Red power LED: Device is being power from host.
- Amber receive LED: Device received a wireless telegram.
- Green transmit LED: Device transmitted a wireless telegram (Transmit is not available with DolphinView Basic).

PRODUCT USAGE:
- With software and the device plugged into a PC the LevNet RF USB computer link can be used in the following ways:
- As a communication gateway between EnOcean enabled devices.
- For monitoring and logging a site having EnOcean enabled devices.
- For testing new or previously existing installations.
- As a repeater.

COMMUNICATION GATEWAY USAGE:
- Utilizing a third party software package and the WSCom tool opens the door to wireless control of all devices within range of the centrally controlled Gateway PC. In this environment the WSCom tool and corresponding software can be used to monitor and control all transmitting devices within range and then can be learned into all receiving devices. This situation allows for the Gateway PC, if desired, to monitor and control all of the lighting controls.

MONITORING AND LOGGING:
- The WSCom tool can be connected to a PC in an office and that PC can be utilized for monitoring the lighting within a small office. This is most useful in conjunction with wireless occupancy sensors to determine a room’s occupancy over the course of a day, week, or month. It can also be used to determine if sensors are false tripping (turning on when they shouldn’t) in order to adjust their sensitivity.

TESTING NEW OR PRE-EXISTING INSTALLS:
- Perhaps the best usage for the WSCom device is enabled by using the DolphinView Basic software to perform a site survey:
- Checking signal strength (dBm level and sub-telegrams) of packets transmitted.
- Verifying devices are transmitting (occupancy sensors) with proper signal strength. The WSCom tool should be located close to the receiving device.
- Validating an install is working properly by logging a rooms data over several days.

ENABLING REPEATER:
- The repeater function is useful for sites where devices are installed within a reasonable range of one another (<100ft) but encounter RF/EML or other wireless interference which degrades the transmission of signals. Those sites with poor signal quality (refer to Device Performance section below) between transmitter and receiver can use the WSCom device to determine best location of repeater.

Enabling the repeater of the WSCom device requires usage of the DolphinView Advanced or other software tool to access to the Telegram Transmit function. When using with DolphinView Advanced open up the “Telegram Transmit” tab (use drop-down menu under the EnOcean logo if not seen).
- Click the “+ Add Operation” tab.
- From the drop-down menu select “Send Serial: ESP3 Packet”.
- Level 1 Repeater: Type 05, Data: 09, 01, 01.
- Level 2 Repeater: Type 05, Data: 09, 01, 02.
- Click on the “Executed” menu to enable the repeater of a device.
- To disable the repeater: Type 05, Data: 09, 00, 00.

A repeater will show up on the receiver side as an increase in Super-telegrams transmitted and also as bit changes in the last four bits of the Status Byte. A Level 1 Repeater only repeats the original transmitted message. A Level 2 Repeater can re-transmit a repeated message.

ENABLING SUB-TELEGRAMs:
- By default sub-Telegrams are enabled on the WSCOM unit when using DolphinView Basic software. When using DolphinView Advanced this feature can be enabled/disabled by accessing the Telegram Transmit function. To do this select Add operation from the drop-down menu and select Sending serial ESP3 packet. To enable sub-telegrams: Type 05, Data: 10, 01, Execute selected. To disable sub-telegrams: Type 05, Data: 10, 00, Execute selected.

A repeater will show up on the receiver side as an increase in Sub-telegrams transmitted and also as bit changes in the last four bits of the Status Byte. A Level 1 Repeater only repeats the original transmitted message. A Level 2 Repeater can re-transmit a repeated message.

DOLPHINVIEW TELEGRAM LOG:
- In the DolphinView Basic tool, locate the Telegram Log at the bottom of the page. This log provides telegram packet arrival time, ID of device, RORG (type of device), Data transmitted, Status Byte (repeated in different sub-telegrams, and other sub-telegrams, and time difference between last transmission of the same telegram received.

An EnOcean enabled Occupancy Sensor will broadcast a message similar to what is shown in Figure 2. The Occupancy Sensor will be a 48S type package (RORG), an unpowered switch will have an RPS type package (RORG) and a Sensor will have a 48P type package. Each of these devices have a unique ID (1 of 4 billion). The quality of the signal can be determined by the dBm level and sub-telegrams. Typically the PTM424 module used in an occupancy sensor will have a best case dBm of -40dB and 3 sub-telegrams. As the dBm goes lower (more negative) and the sub-telegrams decrease the signal quality goes down.

Figure 1. COM Port connection

Figure 2. DolphinView Telegram Log

DI-001-WSCOM-00A
In order to apply filters to the device ID will need to show up in the Workspace on the left hand side of the screen. Double click a device in the unassigned column and it will be added to the Workspace. With this done one can now apply some filters within the Telemonitor section of the program.

- **Dolphin View** starts an event log anytime it opens. The program will log all data and save it to an XML file. This file can be opened, viewed, saved, and searched using Microsoft Notepad.
- Click on the Direction header (figure 4) to filter direction. By default this shows everything.
- Click on the ID (figure 4) to filter which ID (device) is shown. This is good for isolating an area down to what only a few devices are installed. The device ID being filtered should always show up in the Workspace column to the left in order to selectively filter devices. By default this shows all devices.
- Click on ROR (figure 4) to filter only to the type of filter being used. By default all packet types are shown.
- Click on Status (figure 4) to filter for repeated packets, errors, and others. By default all packets are shown.

Additional details on using Dolphin View along with more advanced features can be found through the Dolphin View help files.

**The LevNet RF computer term (WSCOM)** along with the Dolphin View Basic tool will enable users to determine the quality of transmissions at a given site. When doing a site survey it is important to check the signal level (dBm) and sub-telegram (Sub) dibyte to determine if they are in an acceptable range. Below is a guideline on signal quality.

**Signal level as seen by the WSCOM device**

<table>
<thead>
<tr>
<th>Color Code</th>
<th>Signal Quality</th>
<th>Signal Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>Excellent</td>
<td>-50 to -60 dBm</td>
</tr>
<tr>
<td>Green</td>
<td>Good</td>
<td>-50 to -60 dBm</td>
</tr>
<tr>
<td>Green</td>
<td>Fair</td>
<td>-60 to -70 dBm</td>
</tr>
<tr>
<td>Yellow</td>
<td>Marginal</td>
<td>-70 to -90 dBm</td>
</tr>
<tr>
<td>Red</td>
<td>Poor</td>
<td>-90 dBm or less</td>
</tr>
</tbody>
</table>

**Troubleshooting:**

**Driver Installation Problems (Device not detected):** Dolphin View and other 3rd party software providers will typically install the latest FTDI drivers. If problems are encountered the latest (2.08.14 or newer) Virtual Programming Console (VPC) drivers for the FTDI USB UART or Serial USB, right click and select “Update Driver Software…” If the PC is connected to the internet this should find the proper driver and continue. If automatic updating is disabled on the Driver Not Installed: **FTTHEDRIVERDOESNOTGETINSTALLEDPROPERLYANDTHEDEVICEISNOLONGERDETECTEDWHENPLUGGINGINTOTHE0#** THIS WILL REQUIRE ACCESSING THE DEVICE MANAGER UNDER THE DEVICES LOOK FOR **Other factors restricting transmission range:**

- **-11dBi**, or ANT-315-CW-HWR-RPS (-1dBi).
- **-12dBi**, or ANT-315-CW-RCS (-12dBi), ANT-315-CW-RAH (-10dBi), Unpowered Switch/PTM (1BS).
- **-50 to -60 dBm**
- **-50 to -60 dBm**
- **-60 to -70 dBm**
- **-70 to -90 dBm**
- **-90 dBm or less**

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**Industry Canada Compliance Statement:**

This device complies with Industry Canada license-exempt RSS standards. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

**Radio Certification:**

FTC 15.225, IC RSS-210
Contains FCC ID (United States): ODH-LEV/300C
Includes IC (Canada): 2473A-LEV300C

**Specifications:**

- **Frequency Range:** 315 MHz to 2 GHz
- **Modulation Type:** ASK (Amplitude Shift Keying)
- **Power Consumption:** 2uW (DC4.5V) Typ.
- **Antenna:** Operating Temperature: 0°C to 55°C
- **Connector:** USB Type A
- **Addressing:** Factory set unique ID (1 to 4 billion)
- **Antenna:** 25m5R-FMP-3, 50 Ohm, VSWR 2.2 Max, 151mm
- **UL Standard:** UL 60950-1 and CSA C22.2 No. 60950-1-07
- **Certification:** UL 60950-1
- **Radio Certification:**

FTC Part 15.225, IC RSS-210
Contains FCC ID (United States): ODH-LEV/300C
Includes IC (Canada): 2473A-LEV300C

**Antenna Controls:**

- **Power:** On/off switch located on the back of the antenna.
- **Direction Port:** Tuned to point in the direction the device is to be pointed. The device will not work if you cannot adjust the direction.
- **Time ID:** Time delay between each packet transmission.
- **RORG:** Time delay before each packet transmission.
- **Data Status:** Displays the status of the data being sent.
- **dBm:** Displays the signal strength of the data being sent.
- **Subtel:** Displays the sub-telegram number of the data being sent.
- **Destination ID:** Displays the destination ID of the data being sent.
- **Security:** Displays the security level of the data being sent.
- **TimeDiff:** Displays the time difference between each packet transmission.

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This device complies with FCC IC: 2473A-LEV300C. This device is intended for use in residential installations. The user is responsible for ensuring that this device is used only in compliance with the instructions included with the product. The FCC ID is indicated for that type, are strictly prohibited for use with this device.

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**For Technical Assistance Call:** 1-800-824-3005 (U.S.A. Only) www.leviton.com