# User Manual for the WK3-N Outdoor Noise Measurement Kit

The WK3-N is designed and manufactured in the United Kingdom by:

Pulsar Instruments Plc, The Evron Centre, John Street, Filey, North Yorkshire, YO14 9DW, United Kingdom.



Reference number: Model WK3N Revision B

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# Introduction

This outdoor noise measurement kit from Pulsar Instruments is designed for use with the Nova Sound Level Meters with Firmware version V2.5.0.301 only and provides a fully weather-protected system for outdoor noise measurements.

Both the sound level meter and the measurement microphone are protected against adverse weather conditions and can be transported inside the robust, secure case.

For longer-term measurements, external power can be connected to the kit allowing for operation over extended periods of time.

The case also has space for the outdoor windshield assembly, cable, an acoustic calibrator, documentation and other accessories that may be needed as well as for the sound level meter itself.

### What is covered in this manual?

This manual covers the WK3-N outdoor noise measurement kit.

Please refer to the user manuals supplied with the Nova Sound Level Meter and Acoustic Calibrator for more information about the operation of these instruments and for additional care instructions.

This symbol is shown where important instructions or information are displayed.

Please ensure that you read any information and follow the instructions.

### Components of the outdoor measurement kit

The kit consists of the following components:

- Weatherproof Case
- PM172 Outdoor Windshield Assembly
- Battery Packs & Charger
- TR3 Heavy Duty Tripod

The case can be used to transport the sound level meter, acoustic calibrator and outdoor assembly.

Additional components may also be supplied with this kit that are not listed above.

# Assembling the Outdoor Noise Measurement Kit

## Case layout


The system can run from one or two battery packs and they can be swapped whilst the sound level meter is running.

**Putting the Nova Sound Level Meter into the kit case**

Care needs to be taken when removing the preamplifier from the sound level meter, because it is delicate and can easily be damaged.

The microphone capsule is also delicate and must not be knocked.

It is easy to get the wires trapped when closing the lid, so please take care to keep them away from the edge of the kit case when shutting it.

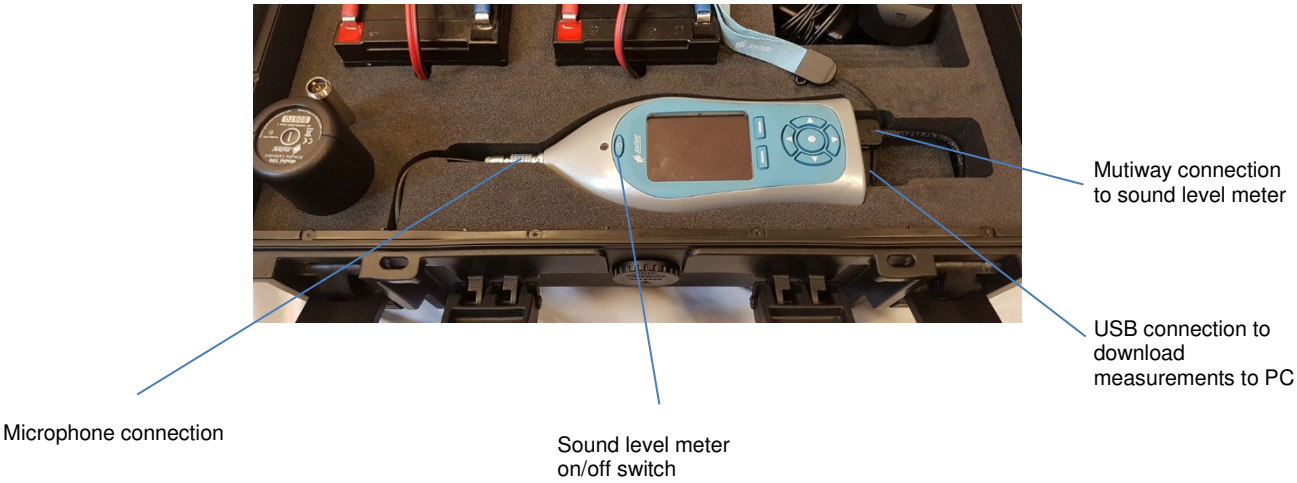
Refer to the Nova Sound Level Meter User Manual for more detailed information regarding care and operation.

Gently remove the preamplifier and microphone from the Nova and store it in the hole in the kit case to keep it safe.

**Connecting the Sound Level Meter**

The Nova sound level meter is connected to the outdoor kit case using two cables.

1. Microphone input
2. Multiway input




The grey rubber protective compartment cover on the base of the Nova can be removed completely while it is in the case.

**Microphone input to the Sound Level Meter**

The microphone signal is connected to the sound level meter via the 6-pin socket at the top of the instrument.

Carefully fit the 6-pin connector to the socket and tighten the locking ring. Do not twist the connector or use excessive force. This may cause damage to the connector and the sound level meter.

**Multi-way connector**

Power is supplied to the sound level meter via an 18-pin connector running from the Interface Box. The socket for this is behind the protective rubber cover at the bottom of the sound level meter.

Plug the connector gently into the socket. There is an arrow embossed on the upper side of the multiway connector to ensure that it is aligned correctly.

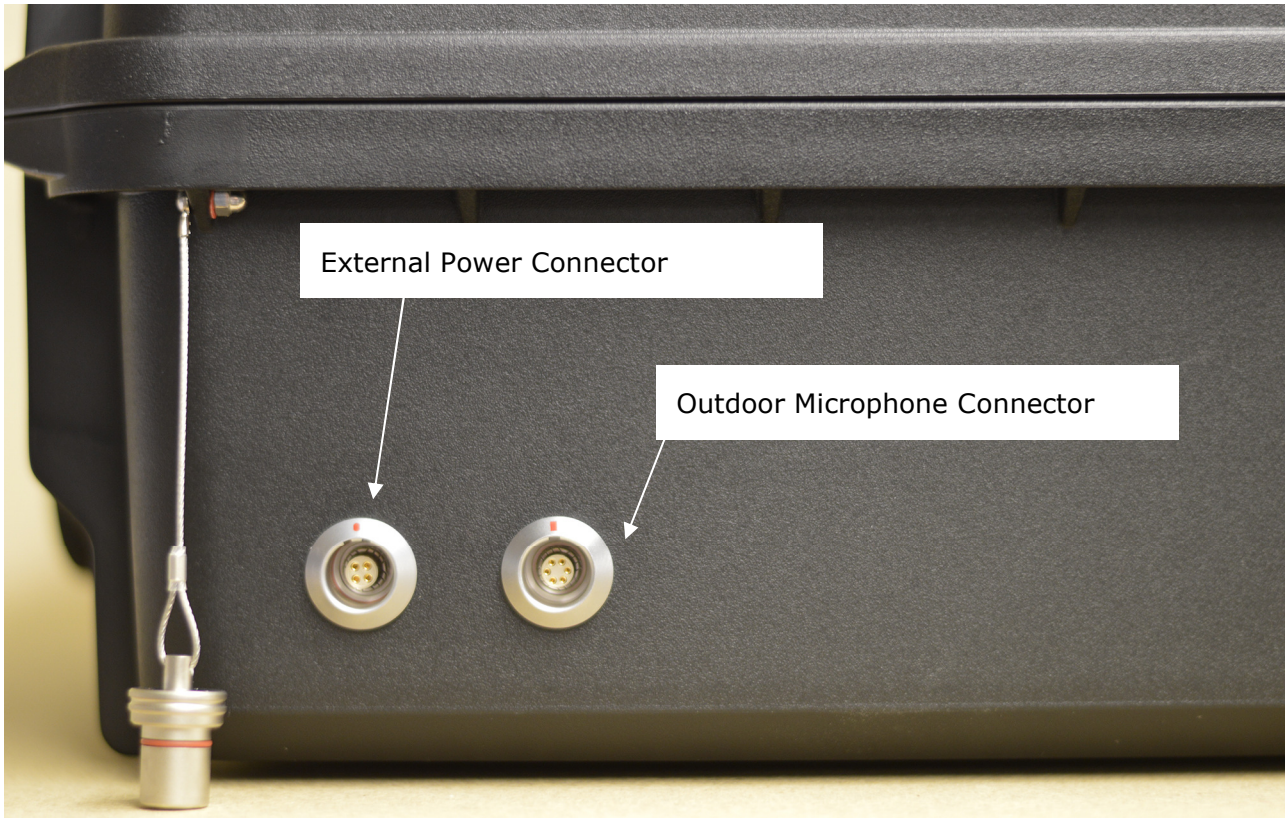
**USB input**

The USB connection on the bottom of the Nova sound level meter can be used to download measurement information to the Analyser Plus software.

To download data directly via the USB connection, connect a standard USB cable to the socket on the bottom of the sound level meter and connect the other end to a PC running the Analyser Plus software.

**External connectors**

The outdoor noise measurement kit has two input connectors which are located on the outside of the case as shown below:




**Outdoor Microphone Connector**

The microphone input from the PM172 Outdoor Microphone Assembly is connected via the 6-Pin microphone socket.

Remove the protective cap and insert the plug. Pull back the body of the connector to release.

**External Power Connector**

External power is connected via the 4-Pin socket. Remove the protective cover where fitted and insert the plug. Pull back the body of the connector to release.

The kit can be powered from a range of external sources which allow operation over long periods. This can be essential for long term continuous monitoring projects or where it is not possible to access the equipment on a regular basis to replace or recharge the internal battery power.

External power in the range of 12-18V DC can be connected to the kit via the input socket on the side of the case. The optional PSC3 cable can be used to connect external batteries to the case.

Where mains power is available, the PS3 External Power Supply can be used. This provides a stable power source to the kit and can be used alongside an internal battery, further extending the operating life of the system.

External power must only be connected via an optional PSC3 cable or the PS3 Mains Power Supply.

The charger that is provided with the battery pack is not weatherproof and must only be used to charge the internal battery packs.

**Checking the power supply to the sound level meter**

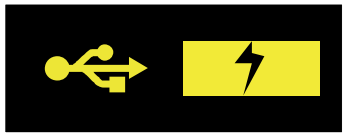
Please ensure that the Nova sound level meter is receiving power from the battery packs and that the battery packs are charged before leaving the equipment.

If the Nova is not receiving external power, it will run for approximately 30 hours on its 6xAA internal batteries (when these are new) and will then switch off.

There are different conditions under which these power indicators will show.

The table below shows the different power states.

**Table 1 Battery Indicators**

| Indicator | Power Source | Notes |
|---|---|---|
|  | Internal Batteries | External power is not connected |
|  | Internal Batteries | External power is not connected. Internal batteries are low. |
|  | Internal Batteries | USB Data is also connected |
|  | External power | The Nova is receiving power from an external battery or power supply |
|  | External Power Connected<br>USB Data Connected | The Nova is receiving power from an external battery or power supply<br>USB is also connected |

**Internal Battery Packs**

The Outdoor Noise Measurement Kit is supplied with 2 rechargeable batteries as standard.

The battery packs are connected via red and blue spade connectors. Push the connectors onto the battery or batteries and check that they are secure before use.

It is recommended that the batteries are removed from the case for charging.

External power does not charge the internal battery or batteries. This is for safety reasons.

**Assembling the PM172 Outdoor Windshield (using the microphone from the Nova)**

The PM172 has been designed for long term operation.

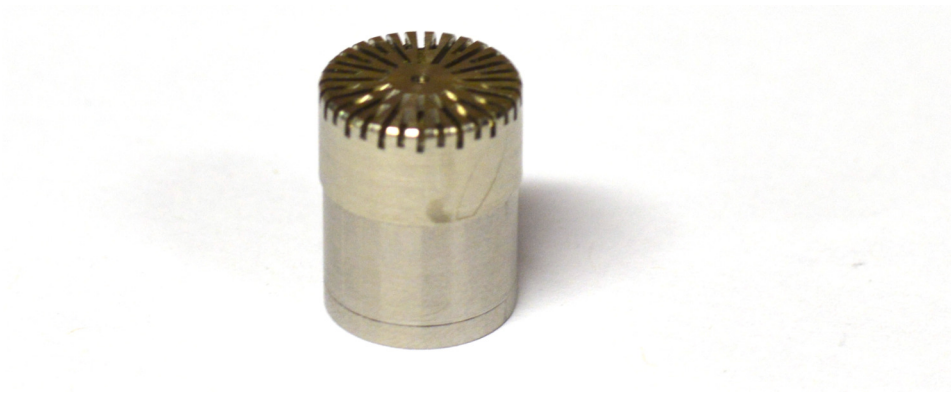
The windshield has been coated to repel water and to protect the microphone from harsh weather conditions.

The windshield assembly can be removed for calibration.

A 10m cable is supplied as standard with a LEMO plug that connects to the socket on the side of the main case.

**Microphone Capsule**

The microphone capsule supplied with the sound level meter should be used with the outdoor microphone. This capsule is usually supplied attached to the instrument preamplifier. The microphone capsule is shown below:



It is possible to use an additional microphone capsule with the outdoor windshield assembly. Please contact Pulsar Instruments plc or your local representative for details.

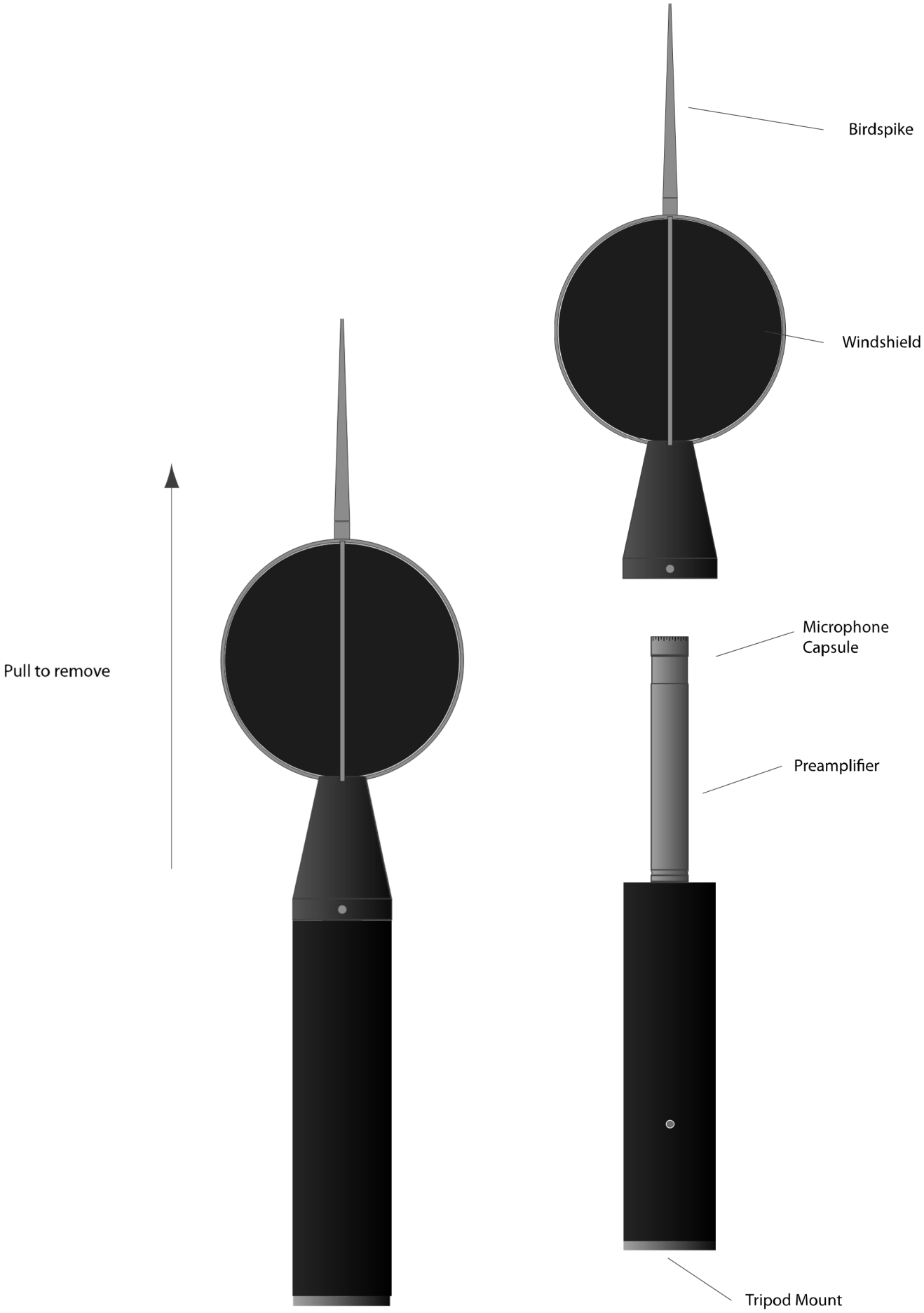
To attach the microphone capsule to the outdoor preamplifier, remove the windshield assembly.

- Carefully pull the assembly upwards away from the body of the unit.
- Carefully screw the microphone capsule to the top of the outdoor preamplifier.
- Carefully replace the windshield assembly.

**Mounting the Outdoor Assembly.**

The PM172 Outdoor Microphone can be mounted onto a standard camera tripod with a ¼” Whitworth thread (supplied as standard).

To attach the unit, carefully screw the base onto the tripod and secure.


Birdspike
Windshield
Pull to remove
Microphone Capsule
Preamplifier
Tripod Mount

**Switching on the system**

Before switching on, ensure that all of the cables and connectors are secure.

Ensure that the system has power from either an internal battery (or batteries) or from an external power connection.

Press the power button on the front of the Nova Sound Level Meter. The Nova will power up and is then ready to be calibrated and to make measurements.

# Calibrating the Nova Sound Level Meter with Outdoor Microphone

Calibration of the entire measurement chain is important to ensure that the noise levels recorded are accurate.

Calibration should always be carried out with the PM:172 outdoor assembly, complete with microphone, attached via the 10m cable into the case of the outdoor measurement kit and with the Nova Sound Level Meter connected and switched on.

- Remove the windshield from the PM:172 (See page 10)
- Ensure that the microphone capsule from the sound level meter is attached to the PM:172
- Insert the microphone into the cavity of the acoustic calibrator and switch on the calibrator
- Press the Calibrate button on the Nova sound level meter and the instrument will calibrate itself
- When the calibration has been completed, press the Back key
- Carefully remove the acoustic calibrator from the outdoor microphone and store in the case
- Replace the windshield assembly on to the PM:172.

Please refer to the user manuals for the Acoustic Calibrator and the Nova Sound Level Meter for any additional information regarding use of the sound level meter.

# Making measurements with the Outdoor Noise Measurement Kit

Always review the following steps before undertaking noise measurements with the outdoor noise measurement kit:

1. Is the outdoor microphone assembly connected?
2. Is the Nova Sound Level Meter connected to both the multi-way connector and the microphone connector?
3. Is the clock in the Nova Sound Level Meter correct?
4. Has the system been calibrated?
5. Has the Nova Sound Level Meter been programmed to make measurements and if so, are these settings as expected?
6. Is the Nova Sound Level Meter measuring and storing data? Check that the green indicator is showing in the top right corner of the display of the instrument
7. Has the case been closed and locked securely and are all connectors and cables secure?

# Specifications

| | |
|---|---|
| Acoustic Measurements | Determined by the Nova Sound Level Meter |
| Microphone Capsule | From Nova Sound Level Meter<br>The microphone capsule provided with the sound level meter should be used with the PM:172 outdoor windshield assembly to maintain the calibrated measurement chain. |
| Connectors | Microphone input from PM:172 |
| **External Power** | |
| External power | 12-18v DC |
| Weight & dimensions | |
| WK3-N | 47 x 18 x 36 cm<br>14 kg/31 lbs<br>including 2 x PU:673 batteries, charger & PM:172 Outdoor Windshield Assembly |
| PU:673 Battery | 4.4 kg/9.7 lbs |
| PM:172 Assembly | 335mm with 75mm WS253 coated windshield & birdspike.<br>Includes 10m cable with connector |

For detailed specifications for the Nova Sound Level Meters, please refer to the appropriate product data sheet which can be downloaded from the Pulsar Instruments website at www.pulsarinstruments.com

Dimensions & weights do not include the TR3 Tripod.

**Battery life**

The table below shows typical battery life under different operation conditions.

| Kit Type | Battery Life with 1 x PU:673 Battery | Battery Life with 2 x PU:673 Batteries |
|---|---|---|
| WK3-N | 7 days | > 14 days |

Please note that these are typical values and relate to Nova sound level meters using Firmware version V2.5.0.301 only.

The Nova will switch off when the external voltage drops below approx. 10.5V. This protects the external battery from becoming deep discharged and helps prolong the life of the battery.

**Battery Type**

The kit can accommodate up to 2 internal batteries which provide power to the Sound Level Meter and Outdoor Microphone.

The spaces in the case are designed to take a 12v/14Ah battery with dimensions of 151mm x 98mm x 100mm and which provide 6.35mm tags (Faston 250).

Examples of suitable batteries include:

| | |
|---|---|
| Panasonic | LC-CA1215P with Faston 250 tags |
| MK | ES14-12 |

## Options & Accessories

A range of options and accessories are available to enhance or extend the capabilities of the outdoor noise measurement kit.

| Code | Description |
|---|---|
| PU673 | Additional/Spare 14Ah Lead Acid Battery for WK3-N |
| PSC3 | External Power Cable with Crocodile Clips for external 12v battery |
| PS3 | External Weatherproof Power Supply - Specify Plug Type:<br>110V 16A<br>UK Type<br>US Type<br>EU Type |
| WS253 | Replacement Windshield for PM:172 Outdoor Microphone Assembly |
| TR3 | Tripod for Outdoor Microphone Assembly (supplied as standard) |

## Instrument Compatibility

The kit has been designed to be used with the Nova Sound Level Meters with firmware version v2.5.0.301.

Instruments with other firmware versions will need to be updated to version v2.5.0.301. Please contact Pulsar Instruments for details.

# Declarations

**EU Declaration of Conformity**

Manufacturer:

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Tel: +44 1723 518011

Equipment Description

The following equipment manufactured after 1st August 2018:

Model WK3-N Outdoor Noise Measurement Kit

Along with their standard accessories

According to EMC Directive 2014/30/EU, Low Voltage Directive 2014/35/EU and ROHS Directive 20111/65/EU:

meet the following standards

EN 61000-6-3:2007+A1:2011

Electromagnetic compatibility (EMC). Generic standards. Emission standard for residential, commercial and light-industrial environments.

IEC 61000-6-1:2007

Electromagnetic compatibility (EMC). Generic standards. Immunity standard for residential, commercial and light-industrial environments.

Martin Williams
Technical Director Dated 1 August 2018

# Guarantee

Pulsar Instruments Plc offers a 12 month guarantee on all of their units. This covers all parts and labour excepting only damage caused by the user. Because of the unique fragility of microphones, only internal short or open circuits are accepted as faults and not accident damage. The guarantee requires the user to return the unit to their nearest authorised Pulsar Instruments Plc Agent. This guarantee is in addition to any statutory rights in your country.

# Pulsar Instruments Plc

The address given below is for the Pulsar Instruments Plc office. Pulsar Instruments Plc also have approved distributors and agents is many countries worldwide. For details of your local representative, please contact Pulsar Instruments Plc at the address below. Contact details for Pulsar Instruments Plc authorised distributors and agents are also available from our website at the address shown below.

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