User's Manual
power2max NG Power Meter

1 Quick Start Guide

Warning

Please read the user's manual carefully before installation and use! Improper installation can cause accidents. In case of doubt, consult a professional bicycle mechanic. Observe the indicated torque values when installing screws and bolts. (See installation instructions at www.power2max.com.)

Before going on a ride, get to know the functions and operation of your power meter. Get a checkup from a sports physician before starting your training program. Pay attention to traffic and road conditions before checking any data.

Quick start guide

Thank you for choosing a power2max NG power meter! For installation, please download the installation instructions: www.power2max.com

USB charging unit: Please note: To charge your NG power meter, an USB charging unit with the USB 2.0 or higher standard is required.

Included:
power2max NG power meter
USB power cable
Quick Start Guide including inspection certificate

Optional:
NG colored ring, USB charging unit, Installation tools, Crank set, Bottom bracket, Chainring set, Chainring bolts

Installation and operation:
1. First, completely charge the power2max NG power meter:
   a. Open the USB cover.
   b. Connect the charging unit to the power2max NG power meter via the USB cable (the LED indicator light flashes red during charging).
   c. Charging is complete when the red LED indicator light turns off.
2. Remove the USB cable from the power2max NG power meter.
3. The LED indicator light blinks green. Close the USB cover and connect the power meter to your bike computer or your Bluetooth-enabled smartphone (observe manufacturer's instructions).
4. Install chainrings onto the power meter. (Installation instructions at www.power2max.com.)
5. Install the power meter at the crank. (Installation instructions at www.power2max.com. Observe manufacturer's instructions for torque values!)
6. Install the crankset on the bicycle. (Installation instructions at www.power2max.com. Observe manufacturer's instructions for torque values!)

After installing, check the function of the front derailleur and adjust as necessary.

Finished! Now: go ride and have fun with your power2max NG!

2 Contents

3 Declaration of conformity

DECLARATION OF CONFORMITY

Saxonar GmbH hereby declares that the power2max power meter complies with the essential requirements and further relevant provisions of the 1999/5/EC Directive. The complete declaration of conformity is available at https://www.power2max.de

Statement of Compliance for FCC and Industry Canada

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15C of the FCC Rules and Radio Standards Specification RSS-247, Issue 1. These limits are designed to provide reasonable protection against harmful interference in a residential Installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular Installation.

Operation is subject to the following two conditions: This device may not cause harmful interference, and this device must accept any interference received, including interference that may cause undesired operation. This product meets the applicable Industry Canada technical specifications. The term „IC:" before the radio certification number only signifies that Industry Canada technical specifications were met.

WARNING:

Any changes or modifications not expressively approved by Saxonar GmbH could void the user's authority to operate this equipment.

Statement of RoHS Compliance

Saxonar GmbH certifies that this product and its packaging are in compliance with European Union Directive 2002/195/EC on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronics Equipment, commonly known as RoHS.

DÉCLARATION DE CONFORMITÉ

Saxonar GmbH déclare par la présente que power2max est conforme aux exigences essentielles et aux autres dispositions pertinentes de la 1999/5/EC Directive. La déclaration de conformité complète est disponible à l'adresse https://www.power2max.de

Déclaration de conformité pour FCC et Industry Canada

Cet équipement a été testé et reconnu conforme aux limits pour un appareil numérique de classe B, conformément à la partie 15C de la norme FCC concernant les normes et les normes radiophoniques RSS-247, numéro 1. Ces limites sont conçues pour fournir une protection raisonnable contre les interférences nuisibles dans une installation résidentielle. Cet équipement génère, utilise et peut émettre de l'énergie radiofréquence et, s'il n'est pas installé et utilisé conformément aux instructions, peut causer des interférences nuisibles aux communications radio. Cependant, il n'y a aucune garantie que des interférences ne se produiront pas dans une installation particulière. Son utilisation est soumise aux deux conditions suivantes: Cet appareil ne doit pas provoquer d'interférences nuisibles et cet appareil doit accepter toute interférence reçue, y compris les interférences susceptibles de provoquer un fonctionnement indésirable. Ce produit répond aux spécifications techniques applicables d'Industry Canada. Le terme «IC» avant le numéro de certification radio signifie seulement que les spécifications techniques d'Industrie Canada ont été respectées.

ATTENTION:

Toute modification ou modification non expressément approuvée par Saxonar GmbH peut annuler la permission pour utiliser cet équipement.

Déclaration de Conformité RoHS

Saxonar GmbH certifie que ce produit et son emballage sont conformes à la directive européenne 2002/195 / CE sur la Limitation de l'utilisation de Certaines Substances Dangereuses dans les Équipements Électriques et Électroniques, connue sous le nom de RoHS.

4 Warranty

4.1 Scope of warranty
Unless it is stated differently in this document, Saxonar GmbH guarantees that the product is free of manufacturing and material defects. Any claims resulting from this warranty are to be directed to the Saxonar GmbH. The original proof of purchase must be submitted. Unless it is stated differently in this document, Saxonar GmbH does not cover any other guarantees and warranties, makes no other assurances of any kind (expressed or implied) and hereby excludes any liability (including any implied guarantee for proper use, handling or suitability for a specific purpose).

4.2 Local regulations
This warranty grants you specific rights. Depending on the state (USA), province (Canada) or your home country, you may also have other rights. To the extent that this warranty is inconsistent with local regulations, it must be modified to conform with existing legislation. The respective local laws and regulations may be subject to exclusions or limitations due to this warranty. As an example, for specific states in the USA as well as other countries outside of the USA (including Canadian provinces), the following applies:
Exclusions and limitations in this warranty may not limit statutory consumer rights (e.g., United Kingdom). Any such exclusions and limitations are thus invalid.

4.3 For consumers in Australia
In order to file a warranty claim, please contact the local importer or dealer from whom you purchased this product. In the case of a valid warranty claim, Saxonar GmbH reserves the right to choose whether to repair or replace your power2max product.
You are required to cover any costs you incur when filing a warranty claim. The rights you are granted in this warranty apply in addition to other rights and legal remedies that you may be legally granted in the context of our products. Warranties apply to our products that can not be excluded by Australian consumer protection laws. In the case of major failure, you have a claim to a replacement or a refund of the purchase price as well as a compensation for any further reasonable foreseeable losses or damages. You also have a right to have products be repaired or replaced if their quality is flawed and the flaw is not deemed to be a major failure.

4.4 Limitation of liability
To the degree allowed in accordance with local regulations and with the exception of the expressly described obligations in this warranty, the Saxonar GmbH and its suppliers exclude any liability for direct, indirect, special, accidental/coincidental or consequential damages.

4.5 Warranty disclaimer
The warranty does not apply to products that are not installed and/or adjusted professionally or in accordance with Saxonar GmbH's appropriate user's manual. The power2max user's manuals can be downloaded on the internet at www.power2max.com
This warranty does not apply to damages to the product as a result of accidents, crashes or incorrect use, not observing manufacturer's specifications or other circumstances in which the product was subject to loads or forces that the product was not intended for.
This warranty does not apply if the product was modified; this includes but is not limited to any attempt at opening or repairing any electronic and associated components including motors, controllers, batteries, wiring, switches and charging units.
Warranty claims are also void if the serial number or manufacturing code has been altered, made illegible or removed.
Normal wear and tear are excluded from warranty. Normal wear of components can take place as a result of appropriate use, not adhering to the Saxonar GmbH's maintenance recommendations and /or riding in conditions that are not recommended.
The following components are subject to "normal wear":

Dust seals
Sockets/bushings
Airtight O-rings
Mechanical seals
Moveable rubber parts
Foam rubber rings
Stripped threading/screws (aluminum, titanium, magnesium or steel)
Tools
Batteries (also rechargeable batteries)
The warranty for the batteries (also rechargeable batteries) and the power meter does not apply to damages resulting from power surges, the use of improper charging units, a lack of maintenance or any other inappropriate use.
Damages that are caused by third-party components are excluded from this warranty.
Damages resulting from the use of parts that are not compatible or appropriate or are not authorized for use by the Saxonar GmbH for power2max power meters are excluded from this warranty.
The warranty shall not cover any damages that are caused by commercial use (rentals).

5 Introduction

Thank you for choosing a power2max power meter.
Reaching beyond your previous limits is not always a question of major changes; but you need to use the right tools at the right times. Our products are easy to use, intuitive to operate and user-friendly while offering you very precise and consistently reliable power data – no matter where and when you ride your bike. Your power2max power meter was carefully developed and assembled in Germany by hand in 56 steps.
Ride smart and get your watts up!
Your power2max Team

5.1 Read me before starting!
Please read the user's manual before installation and operation!
Improper installation can lead to accidents. In case of doubt, consult a professional bicycle mechanic.
Observe the indicated torque values when installing screws and bolts. Screws and bolts that are too tight or loose can damage your power meter.
Before going on a ride, get to know the functions and operation of your power meter.
Get a checkup from a sports physician before starting your training program.
Pay attention to traffic and road conditions before checking or controlling any data from your head unit.

6 Scope of delivery

Your power2max NG power meter system is made up of:
power2max NG power meter spider (corresponding your choice of crankset version and bolt circle diameter)
USB charging cable
Quickstart Guide with inspection certificate
Packaging

Optional:
NG colored ring
USB charging unit
Lockring tool (to install the power2max NG power meter to the crankset)
Crankset, bottom bracket, chainring set, chainring bolts as ordered.

IMPORTANT:
Please confirm that scope of delivery is correct and complete.

7 Operation and installation

Please note:
It is necessary to observe indicated torque values during installation.
You can also find these values in the download area of power2max.com.
Screw and bolt connections that are torqued too heavily or weakly could damage the power meter and impair the function.
In the case of bicycle frames with a BB86 or BB386EVO bottom bracket standard, the compatibility between the power meter and frame must be tested before installation.

7.1 Necessary tools
Depending on the model of your power2max NG power meter you will need the following tools to assemble the power meter to the crankset.
Lockring Tool: To install the crankset to the NG Cannondale Hollowgram, NG FSA BB386evo, NG Rotor 3D24, NG Rotor 3D30, NG Rotor 3D+ or NG Specialized S-Works) a lockring tool is needed.
Torx Key: To install the NG FSA Megaexo, or NG SRAM Force22/S900): A Torx key for installing the crankset to the power2max NG power meter is needed.
Depending on the model: Allen key to install the crankset in the bottom bracket.
Depending on the model: medium-strength threadlock (e.g. Loctite 243).
Optional: bench vice to fixate the specific tool during installation.

7.2 Operation and first steps
Your power2max power meter has an LED indicator light to control its function. This enables you to easily test functionality and operate the system in a quick and uncomplicated way.
7.2.1 Charge the battery
USB Charging Unit: Please note: To charge your NG power meter, a USB charging unit with the USB 2.0 or higher standard is required.
Completely charge the power2max NG power meter. To do so, open the USB port cover on the power meter, plug the small end of the USB cable into the USB port and the big end of the USB cable into the USB charging unit. The LED indicator blinks red.
When the red LED indicator goes out, charging is complete. Remove the USB cable from the power2max NG power meter (the LED indicator is now flashing green for app. 1 minute), close the USB cover Check to see that the USB cover is seated properly!
7.2.2 Pair your head unit with your power2max power meter
Pair your Ant+ or Bluetooth enabled head unit with your power2max NG power meter. As long as the green LED indicator light blinks, the power2max NG power meter is emitting signals that can be received by the head unit. Observe the respective manufacturer's manual. Pairing your head unit is only necessary when operating the power meter for the first time. However, you can repeat the pairing of your ANT+ or Bluetooth-compatible head unit at any time. To do so, you just have to activate your power2max NG power meter by turning the cranks. Your power2max NG power meter then signalizes its availability for pairing by blinking its green LED indicator light for one minute.
Please note: Different power meters on different bicycles should be put into operation one after another to avoid unwanted connections between the different power2max power meters and your head units.

7.3 Head units

You need an ANT+-enabled head unit that supports the power-only profile (PWR). For example, suitable head units are:

CYCLEOPS: Joule 2.0 and 3.0

GARMIN: Edge 500/510/520/800/810/820/1000, Forerunner 310XT/910XT

O-SYNCE: navi2coach, Macro X and Macro High X

Wahoo: Elemnt

You can find a current list of compatible products at the ANT+ Alliance:

http://www.thisisant.com/directory/power2max-road-rotor-3d-plus-bcd-110-or-130/

The data for power, cadence, left-right distribution and smoothness are calculated and transmitted via ANT+.

In addition, your power2max NG power meter offers the option of using a Bluetooth low-energy compatible display instrument (BLE) that supports the Cycling Power Profile.

7.4 Installation of your power2max NG power meter on your bike

7.4.1 Chain ring installation

1. First install the chainrings on the power2max NG power meter. In the process, take care that they are aligned correctly and solidly attached in accordance with the respective manufacturer's specifications. Guide the large chainring from above onto the power2max NG power meter.
2. Align the holes for the bolts.
3. After you have guided the small chainring onto the power2max power meter from the rear, tighten everything with the dedicated chainring bolts.

IMPORTANT: Observe the torque values prescribed by the manufacturer.

Pay attention to the alignment of the chainrings and bolts. Please adhere to the manufacturer's specifications.

7.4.2 Crank Installation

1.   Mount the crankset to the power2max power meter.
2. Guide the right crankarm from the front through the opening in the power meter. Pay attention to the alignment and the correct fitting of the crankset to the power meter.
3. For models with lockrings (e.g. Cannondale Hollowgram, FSA BB386evo, Rotor 3D24, Rotor 3D30, Rotor 3D+ or Specialized S-Works): place a few drops of medium-strength threadlock (e.g. Loctite 243) on the inner side of the lockring and tighten it with the help of the Lockring tool. **PLEASE NOTE**: Pay attention that the lockring is seated properly on the thread. Lock the lockring tool into a vice. Doing so, you can make sure that the lockring tool is secure and stable for further installation.
4. Tighten the lockring to the prescribed torque values
5. For models that are installed with threads (e.g. FSA Megaexo, SRAM Force22/S900): place a drop of medium-strength threadlock on the installation bolts. If threadlock has already been applied at the factory, then you can skip this step. Tighten the installation bolts to the prescribe torque values. You can also find these values in the download area on power2max.com.
    Install the entire crankset to your bicycle. To do so, follow the steps in the installation instructions provided by the crankset manufacturer. If necessary, these can be requested from the crankset manufacturer or from a retail store. We recommend checking the correct function of the front derailleur and, if needed, re-adjusting it.

IMPORTANT: Observe the installation instructions prescribed by the manufacturer.

The initial operation and installation of your power2max power meter is now completed.

8 Using your power meter

Using your power2max NG power meter is as easy as the initial operation and installation is.

8.1 Before your ride
When your bicycle isn't being used, the power2max NG power meter is in standby. When the crank is moved, the power2max NG power meter is activated automatically, and the power2max NG power meter begins emitting a signal. This is shown by the blinking of the green LED indicator light. At first, the LED indicator light shows the battery level and then its availability for a connection to a Bluetooth low-energy compatible instrument (see also 15: Technical specifications, LED signals).

8.2 During your ride
Your power2max NG power meter updates the metrics of power, cadence, left-right distribution (balance) and smoothness in 1 second intervals; they are then transmitted per ANT+ protocols or BLE. In the case of BLE, torque data is also available.

8.3 Zero-point adjustment and thermal correction
To ensure a precise power measurement, the zero-point (the measured value when no torque is present) is automatically determined by your power2max NG power meter. The zero-point adjustment compensates for influences caused by temperature variations and mechanical zero-point shifts. It is possible to repeatedly set the zero point at the head unit, but it isn't necessary! This is performed by the system automatically when it is not under power. "Not being under power" means a stop in pedaling for at least two seconds during a ride. If a de-powering as described above is not possible, for example during a long mountain climb, then your power2max NG power meter automatically compensates for temperature. Thus your power2max NG power meter guarantees a reliable power measurement.
IMPORTANT:
In the case of track models, the automatic zero-point adjustment is deactivated. You should regularly perform a manual zero-point adjustment with your head unit.

8.4 Battery life
Battery life is approximately 150 hours. Battery life can be decreased by low temperatures and by transporting your bicycle, for example in your car.

8.5 After your ride
Your power2max NG power meter independently enters standby mode approximately two minutes after ending your ride.

8.6 Charging the battery
Please follow steps described under 7.2.1 to charge your battery. When charging is completed, the LED Indicator light blinks red.

8.7. Battery charge level
Directly after activation / waking up your power meter:
3 x green: battery charged 60 - 100%
2 x green: battery charged 40 - 60%
1 x green: battery charged 20 - 40%
1 x red short: battery charged 10 - 20% (equates to "weak battery")
1 x red long (5 seconds): battery charged 0 - 10%

Please note: To protect the battery from damage, it automatically shuts off when it goes below a minimum capacity.

8.8 Turning the power meter on and off
1. Turn it off: Plug the big end of your USB cable into the charging unit. Open the USB port cover on the power meter, plug the small end of the USB cable into the USB port and remove it within two seconds again!
2. Turn it on: Plug the big end of your USB cable into the charging unit. Open the USB port cover on the power meter, plug the small end of the USB cable into the USB port and wait until the green LED indicator light turns on. After approximately five seconds, the red LED indicator light blinks (charging). Then the power meter is turned on.

Please note: When transporting your bicycle, the power2max NG power meter is activated. Therefore, it is recommended to turn off the power meter for longer transports. You should generally turn it off when transporting your bike in a plane.

8.9 After a crash
As a spider-based power meter, the power2max NG power meter is located in a place where crash forces are usually completely absorbed by the crank and bottom bracket. Therefore, crash damage to a power2max NG power meter is almost impossible.
In the interest of your own security and health, you should do the following checks after a crash:
1. Please check if the crankarms have sustained any damage. (The crankarms could suffer from hairline fractures that you may eventually not recognize at first glance, but which could result in sudden failure over time. Therefore, replacement is recommended.
2. Please check if anything is rattling around the crankset or the bottom bracket. This can be an indication of damage.
3. Examine all mechanical connections.

9 Maintenance and care

1. The USB cover should be checked occasionally to see whether it is seated correctly and, if necessary, it should be replaced so that the USB socket maintains its waterproof seal.
2. After longer rides in the rain, please examine if water has penetrated the USB cover. Should this be the case, allow this area to dry out while the USB cover is off. You can assist in this process by using an absorbent cloth.
3. Do not use thinners or solvents to clean your power2max NG power meter. Use clear water or soapy water and a soft sponge or rag.
4. PLEASE NOTE: Do not clean your power meter with a high-pressure power hose!

10 Disposal

The symbol of the crossed-out garbage pail on wheels, which can be found on the product, the documentation and the packaging, means that electrical and electronic products, batteries and accumulators need to be discarded separately in the European Union. Do not dispose of these products in general household garbage. Separate these products from other garbage in order not to damage people's health or the environment due to uncontrolled garbage disposal and in order to promote sustainable recycling of material resources.

11 Service calibration and control of function

The power2max NG power meter is calibrated at the factory and doesn't have to be newly calibrated within the warranty period. Regardless of this fact, you still have the option of ordering a calibration and function control in our Web Shop. In this case, we will examine your power2max NG power meter on the outside, perform a new factory calibration and control of function. In addition to your power2max NG power meter, you also receive a new test and approval certificate.

IMPORTANT: Ordering a calibration and function control can be advisable after a crash, among other things. However, it does not extend warranty coverage and only excludes a possible liability resulting from mechanical damage that has not been identified.

12 Troubleshooting

Green LED indicator light blinks after activation
Battery is low – charge battery
Power meter is turned off – turn it on

Red LED indicator light blinks after activation
Power meter error – turn off and then on. If this is unsuccessful, then contact
support@power2max.de

Power meter does not pair with a head unit
Battery is low – charge battery
Power meter is turned off – turn it on
Head unit is not in pairing mode – place head unit in pairing mode
Power meter is in standby – activate power meter by rotating the crank.
Transmission is flawed – avoid sources of disturbance such as WiFi networks, microwaves, mobile phones and other active power meters.

Power meter shows no function
Battery is low – charge battery
Power meter is turned off – turn it on
Operating software is in an undefined state (the power meter has "crashed") – Turn off and then on. If this is unsuccessful, contact support@power2max.de

Power measurements are not plausible
The zero point has changed uncontrollably – during a ride: do a zero point adjustment by depowering

Water intrusion under the USB cover
USB cover not closed correctly – let area dry, close USB cover correctly
USB cover is damaged or worn – let area dry, replace USB cover and close it correctly

13 Technical specifications

Weight: depending on the version – details on the website
Power source: battery
Battery life: approximately 150 hours of active power measurement
Transmission standards: ANT+ Power Only Profile, BLE Cycling Power Profile
Transmitted data:
Power,
Cadence,
Left-right distribution ("Balance"). Note: power left = pressure left pedal + pull on right pedal; power right = pressure right pedal + pull on left pedal.
Smoothness (note: for both legs together)
Accuracy: ±1%
Additional features:
Active thermal correction
Automatic zero-point adjustment
Calibration is independent of chainring selection
No magnet necessary for cadence measurement

Range of measurement and display:
Power: 10 - 2999 W
Torque: 0 - 250 Nm
Cadence: 20 - 250 RPM
Left-right distribution: 0 - 100%
Smoothness: 0 - 100%
Decorative colors: power2max green, white, red, blue, black
LED signals:
Green blinking: power meter activated, BLE and ANT+ active for pairing with head unit
Red blinking long: battery is being charged
Red blinking short: power meter error
Directly after activation:
3 x green: battery charged 75 - 100%
2 x green: battery charged 50 - 75%
1 x green: battery charged 25 - 50%
1 x red short: battery charged 10 - 25% (equates to "weak battery")
1 x red long (5 seconds): battery charged 0 - 10%

14 Copyright

15 Trademarks

power2max is a registered trademark of the power2max GmbH. All other names of products, brands or business names used in this manual can be trademarks or registered trademarks of the respective owners.

16 Changes and errors

Errors excepted. Illustrations in this user's manual are similar and can deviate from the product. The information contained in this manual is subject to change without notice. The Saxonar GmbH reserves the right to make changes and improvements in the product without previous notice.