

# SPECIFICATIONS



## Drive Unit

Drive unit type	Center Motor
Weight	3.1 kg
Rated power	250[W]
Max. torque	80 Nm* (EXPW mode) 70 Nm (High/STD/Eco/+ Eco)
Max. cadence	120 rpm* (EXPW mode) 110 rpm (High/STD/Eco/+ Eco)
Max support Speed	25 km/h
Support Mode (%)	5 modes -EXPW/320 -HIGH/280 -STD/190 -ECO/100 -+ ECO/50

\*Depending on battery condition and circumstances

## Display, Switch and Others

Display	LCD with dot matrix
Connectivity	-USB power supply (1A) -BLE
Function	<Always-on> -Speed -Battery capacity <Selectable*> -Average bicycle speed -Maximum bicycle speed -Trip meter -Odometer -Range -Battery capacity (%) -Cadence -Clock -Stopwatch

\*Among selectable items, less frequently used functions can be hidden.

Battery	400 Wh Battery 500 Wh Battery
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# PW-X

Yamaha e-Bike Systems





# BEING ONE WITH THE MACHINE

**A previously unknown riding experience  
that can only be realized by Yamaha DNA.**

Rider and machine truly unite as one.

That is the "philosophy of development", consistently held by Yamaha.

Not a single note of discord between man and machine can be allowed, in order to achieve this.

What did we pursue in the development of a new assist system?

Realization of a "PURE RIDE" in which riders can completely immerse themselves in the ride.

We filtered out the "existence" that appears between man and machine to the greatest extent,  
by revising every single component.

From this process emerged a drive unit that is more powerful than ever, with natural assists  
characteristics which at times make you forget it is even there.

Yamaha DNA, which has long made dreams of mobility come true, creates a new riding  
experience like never before.



# PURE RIDE

Compact & Lightweight

Quick Response

High Output

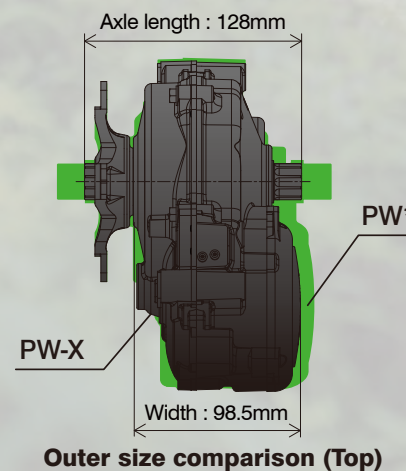
In order to realize "PURE RIDE", we sought to make it lighter, to improve quick response, and to achieve higher power. From low speed range to high speed range, a drive unit more loyal to the rider's will than ever before creates a totally new riding experience.

## Dropping 380g changes the ride. A light weight, compact drive unit.

To make the drive unit more compact, means not simply reducing the overall weight of the machine, but not inhibiting the ideal frame design.

Yamaha thoroughly lightened the weight down to 380g by making the axle shaft hollow, thinning the driven gear, and thinning the case, while simultaneously reducing volume by nearly 13%. We also adopted a 128mm

ISIS interface BB Axle commonly used in MTB, responding to expectations for a more authentic ride.



Outer size comparison (Top)



Hollow axle shaft and Driven gear

Achieved -380g with a thoroughly lightened design

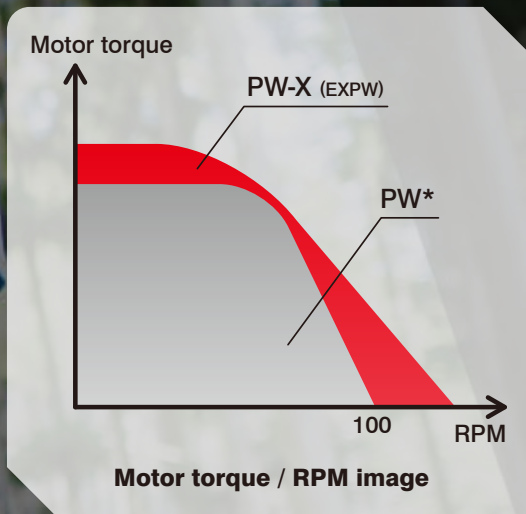
High Output

## Supplies the desired power when needed.

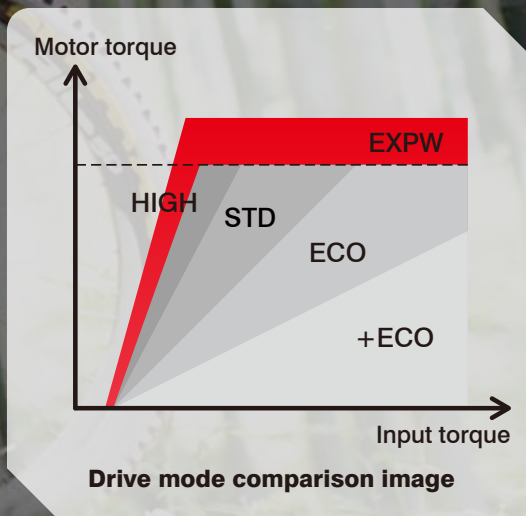
"Truly powerful" as Yamaha sees it is the ability to deliver the power the rider wants quickly and dependably.

PW-X inherited its well established power and control technology, while also adopting a fifth mode; Extra Power Mode.

With EXPW mode, it succeeds in further releasing power originally held by the motor, via the drastically improved cooling effect. It not only improves assist torque in all ranges; compared with conventional models, it better maintains assistance up to high rpm. It also offers strong support to riders recovering from tight turns or climbing challenging steep slopes.



Strong Power Assist up to 120rpm



The excitement of + one

Quick Response

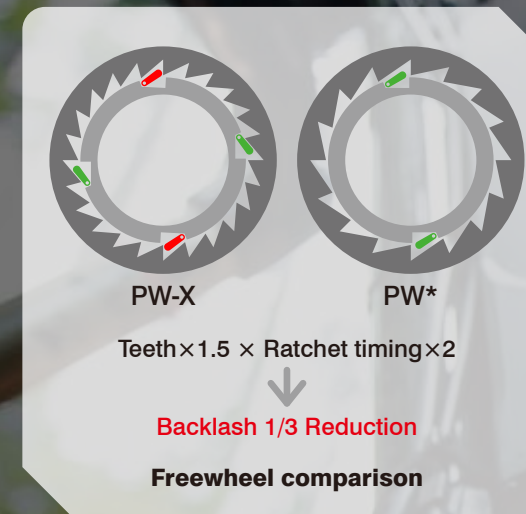
## Updated mechanical components and control program realize previously unexperienced "Best Maneuverability".

To offer a ride directly linked to the rider's intent, Yamaha revised both the mechanical components and control program, in the pursuit of quicker, more direct response to pedaling.

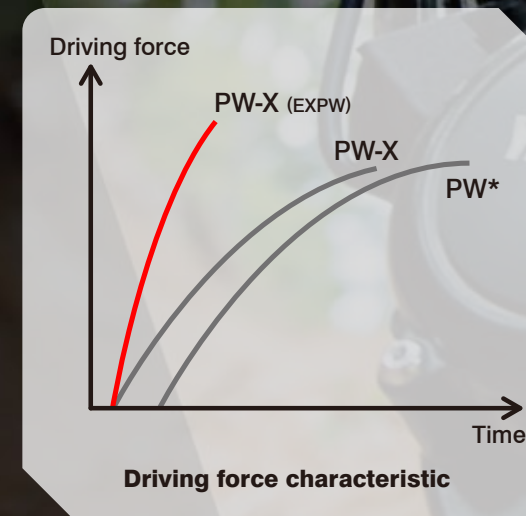
In order to reduce mechanical time lag, we reduced backlash of the ratchet mechanism by 1/3.

Lightening large moving parts, such as the axle shaft and reduction gear, also contributes to a quick response.

In EXPW mode, we more finely tuned the output characteristics of the motor. This keeps massive power while balancing quick response and maneuverability at a high level.



Renewed ratchet mechanism drastically reduce backlash



The EXPW Mode of PW-X realizes the fastest response so far

\*PW series released in 2013

# SIMPLE AND TOUGH

## Updated interface that supports "PURE RIDE"

Yamaha updated the interface so that the rider can concentrate on just the ride.

The concept of the display is "Simple and Tough". Toughness that can withstand hard riding also shows in the design.

In the operation system, we designed a new, ergonomic switch that maintains high operability during any type of riding. Coupled with the LED Assist Mode Indicator that enables the rider to check the selected mode instantly even during hard riding, it casually but firmly supports the rider.

In terms of communications, it opens riding to unlimited forms of enjoyment by supporting BLE and connecting to a variety of apps.



Installation example

The switch improves operability with its ergonomic design



LED indicator

Highly visible Display and Assist Mode Indicator