

The Shimmer3 Bridge Amplifier+ unit is one of the most versatile sensors that we manufacture here at Shimmer. Its flexibility can be a great asset to those who understand just how it can be used. Let's take a closer look at the unit itself and potential applications for it.

Introduction to the Bridge Amplifier+

Do you have an application that requires you to gather load, weight, force, torque or pressure data? If so, you've probably had trouble finding a combination of sensors that allows you to easily correlate all of the necessary data into one system. Applications like these are what the Shimmer3 Bridge Amplifier+ is built for.

The Shimmer3 Bridge Amplifier+ is a unit that allows for a new range of sensors to be connected to the Shimmer3 platform. More specifically, this unit allows for strain gauge and load cell sensors to be easily integrated with Shimmer's Consensus software. This makes the Bridge Amplifier+ ideal for all load, weight, force, torque and pressure measurements.

For this to make a little more sense, let's take a look at one potential application that would require the use of a strain gauge sensor and the Shimmer3 Bridge Amplifier+: lift-bar muscle capacity testing.



Shimmer3 Bridge Amplifier+

Lift-Bar Muscle Capacity Testing



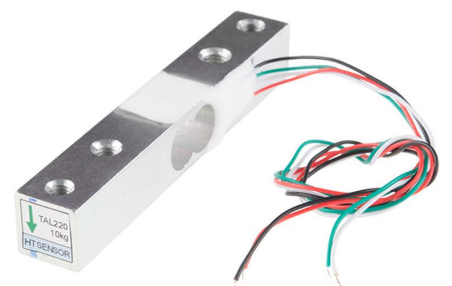
With lift-bar muscle capacity testing, you might try to identify different levels of muscle strength across a constant level of resistance (amount of weight being lifted by the subjects). This probably sounds like a complicated study to set up, but with the help of the Shimmer3 Bridge Amplifier+, it really would not be that hard to execute.

All you would have to do is use a standard strain gauge sensor in conjunction with our Bridge Amplifier+ unit. A strain gauge sensor is a sensor whose resistance varies with applied force. In other words, this sensor converts force measurements into electrical resistance that can then be measured. This is one half of the equation for classifying different levels of muscle strength.

Bringing it Together with the Bridge Amplifier+

The Shimmer3 Bridge Amplifier+ takes care of the other half through its access to gyroscope and accelerometer data. The gyroscope and accelerometer data show the range of motion by a subject against the effect of gravity. This is important because you can clearly see the change in plane from where the subject started lifting the bar to where it ended up when they completed the lift. The change in plane is a great indicator of muscle capacity strength when cross-referenced with the electrical resistance data because the highest level of muscle capacity will show a perfectly even plane throughout the lift. Subsequent levels of muscle capacity strength (as defined by user) can then be identified based on gyroscope and accelerometer data showing deviation from an even plane during the lift.

This potential application shows the beauty of our Shimmer3 Bridge Amplifier+ unit. Shimmer does not manufacture a sensor that provides access to electrical resistance data, however, the Bridge Amplifier+ allows you to seamlessly connect this type of sensor to our platform and cross-reference data that has been automatically time-correlated. To learn more about this technology or to make a purchase, visit the products section on our website. If you have any questions, feel free to contact the email address below.



Strain Gauge Sensor