

Since 1994, the CSG110 signal conditioner has been FUTEK's primary amplifier. Designed to provide a stable power source for our sensors and amplify their signal, it has received 6 redesigns over its lifetime to improve upon that goal. With over 13,000 units sold, the CSG110 has provided an amplified output signal for PLCs, DAQs, oscilloscopes, analog gauges, and FUTEK's lobby demos.

Now FUTEK has released the IAA series of signal conditioning analog amplifiers in our ongoing mission to expand the capabilities and performance of our products.

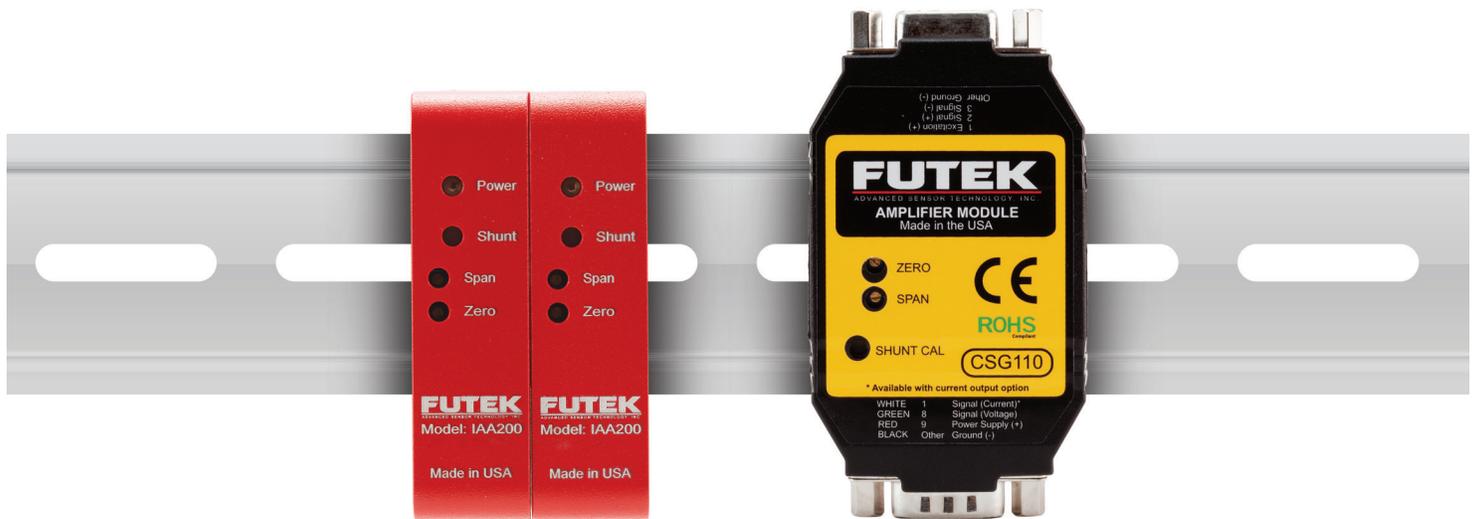


Figure 1: Two IAA Series Amplifiers occupy the same rail space as a single CSG110 Amplifier.

FORM FACTOR

Space is limited unless you have an enviable amount of DIN rail space. The steel metal housing of our new IAA series takes up 58% less space than the CSG110 which allows more room for other instruments. Two of our IAA series units can occupy the same space as a single CSG110. Additionally, you can easily configure your dip switches by simply removing a magnetic cover rather than removing the recessed plastic clips with a screw driver.

Connecting the IAA series to your sensor and your DAQ is now far simpler than the CSG110. The DB9 connector on the CSG110 has been replaced with screw terminal blocks that snap directly into the IAA circuit board. You no longer need to spend time attaching a DB9 connector to your input and output wires. You can simply attach the bare wire directly to the unit allowing you to quickly interchange units.

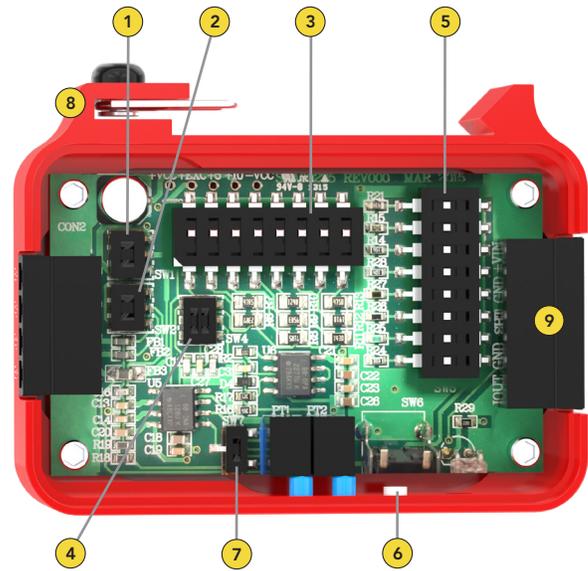
HARDWARE

The key difference between the CSG110 and the IAA series is its hardware. The CSG110 has the hardware necessary for both voltage and current output. If you wanted voltage output, the system would output voltage, but if you wanted current output, the CSG110 would convert the voltage output to current output internally. The additional hardware that allowed for the voltage to current output signal conversion led to about 15 mV_{p-p} of noise. By splitting off the voltage conversion to the IAA100 and current conversion to the IAA200, noise was reduced to 10 mV_{p-p} and 15 μA_{p-p}, respectively.

ADDITIONAL IMPROVEMENTS IN SIGNAL OUTPUT

We increased the bandwidth of the IAA series and made it selectable. With the CSG110 bandwidth was limited to 1 kHz or 10 kHz, with 25 kHz signal bandwidth capability available as a special order. With the increased room freed up on the circuit board in the IAA series, a pair of dip switches has been added for selectable bandwidths of 1 kHz, 10 kHz, or 25 kHz. In addition, the signal offset was available by special order for the CSG110, whereas the IAA series has onboard signal offset as a standard feature.

From a quality of life standpoint, some simple additions have been performed to the IAA series. The simplest one has been the addition of a visible power LED. Unless the CSG110 is hooked to a multimeter or a DAQ, there is no visible indication if the unit is receiving power. The IAA series solves this issue by adding a single LED visible to the outside, allowing for a simple inspection visual inspection of power being received without having to dismount the unit during troubleshooting.



- SW 1 Excitation
- SW 2 Polarity
- SW 3 Gain
- SW 4 Bandwidth
- SW 5 Shunt Selection
- SW 6 Shunt Button
- SW 7 Zero Shift
- 8 Integrated DIN Clip
- 9 Screw Terminal

Figure 2: An inside look at the internals of an IAA series amplifier.

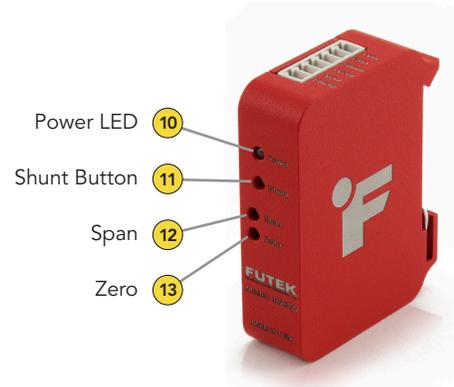


Figure 3: A look at the outside housing and controls of the IAA series amplifiers.

SHUNT USAGE

The CSG110 has an install point for a shunt resistor. With the IAA series that install point has been replaced by a bank of internal shunt resistors controlled by a DIP switch array. By enabling select resistors with DIPs you can emulate almost any shunt resistor you need.

With the IAA series shunt activation is more flexible. Like the CSG110, the IAA series features an externally accessible shunt activation button. However, the IAA series also features a remote shunt activation pin which is located on the amplified input/output terminal. When input power is supplied the shunt is activated

rather than having to press the shunt button on the unit. This remote activation allows for span adjustment with shunt engaged without having to hold down the button. It also allows shunt output verification for units that may be inaccessible.

The IAA series' more compact size and its many hardware improvements prove that they stand as a more optimal choice over the CSG110.

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