

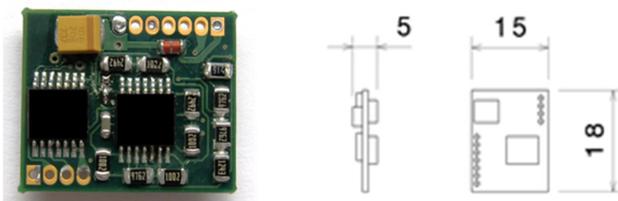
bf1 systems Dual Gain Intelligent Amplifier

The bf1systems dual gain intelligent amplifier is based on the current motorsport proven intelligent amplifier, but now features two separate 0 – 5V outputs with individually scalable gains and offsets. This allows the logging of two channels of push rod load data, allowing a part to be optimised for both dynamic loading conditions and aero balance analysis.

With track testing time now at a premium, the dual gain intelligent amplifier allows engineers to look closely at aero balance during race weekends, and also allows race spec push rods to be used during dedicated straight line testing, minimising a team’s part count.

The bf1systems dual gain intelligent amplifier has been specifically designed to prevent the issues normally associated with standard amplified strain gauge installations, which include:

- When a strain gauged component is temperature compensated by standard methods the offset compensation is only performed at two temperatures, with the effects being minimised at these points. No other temperatures are compensated, which can lead to non-linear behaviour, and can lead to unexpected errors in the load cell. The bf1systems dual gain intelligent amplifier measures the temperature of the strain gauges, applies a correction at each temperature step for offset and span errors in the calibration, and therefore produces a linear output that is far more accurate than even the best compensated gauges.
- Standard strain gauged parts often have individual calibrations, which require corresponding calibrations to be entered into the logger when the part is fitted to the car. The dual gain intelligent amplifier is microprocessor controlled, and each part in a set can be calibrated to provide a standard output, therefore removing the need to enter a specific part calibration and removing any chance of mistakes when entering the calibration. Each part is individually calibrated in a computer-controlled oven over a full load and temperature range, and retains its own unique calibration table.
- Other strain gauge installations have the amplifier separate to the strain gauging, which can lead to signal noise. The dual gain intelligent amplifier has a miniaturised design, which allows the sensor electronics to be mounted directly on the push or pull rod. Due to the sensor electronics being very close to the strain gauging, signal noise is reduced to a minimum. The outputs are a 0-5V signal that does not require screening or separate amplification.
- Many strain gauged parts have not been designed with gauging in mind, therefore when the part is strain gauged, inherent errors are present, which cannot be removed by any means. bf1systems’ in-house design team work with customers from the start of a project to ensure parts are optimised for strain gauging, to give the best possible results. bf1systems also offer a full design, consultation and manufacturing service for the bespoke parts of the system, and can deliver a customised system as a complete package.



Specification

Electrical

- 7 - 18 Volt supply range
- Non-ratiometric output, supply voltage changes do not affect the output.
- Supply current <10Ma
- Two high level 0 - 5V outputs with individually scalable ranges, with no requirement for additional strain gauge amplifiers
- Identical output for all parts, no calibration data entry for each part
- Thermal zero shift over compensated range 0.1% FSO
- Thermal sensitivity shift over compensated range 0.2% FSO
- Internal 150Hz 2-pole low-pass Butterworth filter
- Output connections:
 - 1 = UNIT SUPPLY (+VE)
 - 2 = UNIT GROUND (-VE)
 - 3 = OUTPUT 1
 - 4 = OUTPUT 2

Environmental

- Compensated temperature range 10°C to 125°C
- Operating temperature range 0°C to 125°C

