



# BA 660

## Strain Gage Amplifier

### with **Auto-Zero**

### Features

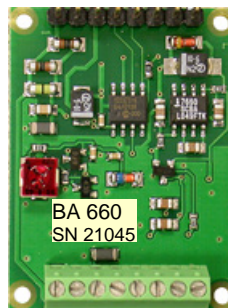
- Auto-zero any input signal up to 100% of full scale
- Zero triggers via external switch or via logic signal from PLC etc.
- Bi-directional measurement. Output voltage 0 to  $\pm 5V$  or optional 0 to  $\pm 10V$
- Input  $\pm 2mV/V$  or optional  $1mV/V$  or  $\pm 3,5 mV/V$
- Connect via screw terminals

### Applications

- Strain measurement on machine parts with strain gages directly applied to it.
- Use with all strain gage sensors, i.e. force measurement, strain measurement
- Automatization with zero tracking
- Whenever zero adjustment should be quick and easy to do

### Description

The BA660 is a miniature amplifier, designed to provide a signal conditioning for full bridge strain gage sensors. A internal voltage reference supplies the excitation voltage for a sensor. The zero adjustment is performed by digital controller with a wide adjustment range of  $\pm 100\%$  of full scale. This allows to run the zero-cycle via an external trigger signal from a switch or a PLC. The zero reading gets stored in a flash memory.



Picture: BA 660  
In original size

It provides direct connectivity to a range of analog input devices as required: PLC, Analog PC cards, displays and many other. The zero adjustment cycle takes only 90ms. The trigger voltage can be anywhere between 5 volts to 30 volts. It is feasible to connect the Z input with the power voltage via a switch in order to trigger a zero cycle.

### Connection

Screw terminal Pin	
1	-U <sub>D</sub> : Input -
2	+U <sub>D</sub> : Input +
3	+U <sub>S</sub> : Excitation +
4	-U <sub>S</sub> : Excitation - (GND)
5	GND : Ground
6	+U <sub>A</sub> : Analog out
7	+U <sub>B</sub> : Power supply +12 to +24VDC
8	Z: Zero control input

## Specifications:

		Unit
<b>Accuracy class</b>	0,1	
<b>Input range</b> (Input signal needed for full scale output)	$\pm 2$ optional $\pm 1$ and $\pm 3,5$ mV	mV/V
<b>Bridge resistance</b>	87 to 5000 $\Omega$ (87 $\Omega$ is equivalent to 4 x 350 $\Omega$ parallel)	Ohm
<b>Bridge excitation</b>	5	V
<b>Input impedance</b>	>20 / 300pF	M $\Omega$
<b>Linearity</b>	<0,02	% F.S.
<b>Temperature coefficient of zero</b>	<0,2 typ. 0,05	% F.S./10K
<b>Temperature coefficient of span</b>	< 0,1 typ. 0,05	% of reading /10K
<b>Bandwidth (-3dB)</b>	<b>250</b> ; optional 20, 2500, 10 000 (Standard bandwidth is 250 Hz)	Hz
<b>Resolution</b>	>20000 divisions (at 250Hz filter)	
<b>Analog output</b>		
Full scale	$\pm 5$	V
Usable range	$\pm 10^*$	V
Output resistance	47	$\Omega$
<b>Zero adjustment</b>		
Tolerance	<5, typical <2,5	mV
Adjustment time	<90	ms
<b>Zero control input</b>		
Low: <1,4		V
High: >5 (max. 28V)		V
auto zero triggers at falling edge. High level must be present for a minimum of 4ms		
<b>Power supply</b>		
Operating range	12 to 24	VDC
Usable range	10,5 to 28	VDC
<b>Power consumption</b>	35 mA, plus current into the full bridge	mA
<b>Stored values</b>	Last zero (stored in Flash memory)	
<b>Operating temperature</b>	-10...+65	$^{\circ}$ C
<b>Storage temperature</b>	-40...+85	$^{\circ}$ C
<b>Dimensions (l x w x h)</b>	40.5 x 30 x 12	mm

\* = Standard output voltage is  $\pm 5$  volts. Optionally available is  $\pm 10$  volts. Please add suffix "A10" when ordering 0 to  $\pm 10$  volts.

## Ordering examples

**BA 660** (=Standard unit. Input 2mV/V, Filter 250Hz, Output 0 to  $\pm 5$ )

**BA 660-E1-F10kHz-A10** (=Input 1mV/V, Filter 10000Hz, Output 0 to  $\pm 10$ V)

**BA 660-E3,5** (=Input 3,5mV and Standard Filter 250Hz)

A version that is adjusting "Zero" to 2.5 volts or 5 volts can be supplied. This version is used together with some analog PC-cards that can not read negative input signals.