

## Features

- compact, flexible, reasonably priced
- compatible to other sensors
- measured quantities: temperature, light, pressure
- output filter 6dB/oct.
- integrated excitation generation

## Applications

- supervision of processes
- development
- research and education



### ... compatible ...

to other manufacturers. Their output voltage is proportional to the input and within the range of 0.1V..5V or 0.1..2.5V. Additionally the ASL-xx provide for the supply of the semiconductor sensors.

Measuring range and offset are adjusted ex works. The ASL-xx are delivered as a circuit board. A plastic housing, label and connection cable are included as accessory.

A high noise suppression is guaranteed by the differential amplifier at the input and the integrated output filter. The ASL-xx are not electrically isolated. Therefore avoid earth or ground loops.

The active sensors of the ASL-xx series have been developed for the basic acquisition of physical quantities. They usually consist of

... semiconductor sensors ... ,

combined with an amplifier. The result is a

... remarkably reasonable ...

price-performance ratio. The ASL-xx are

## 1 Block diagram

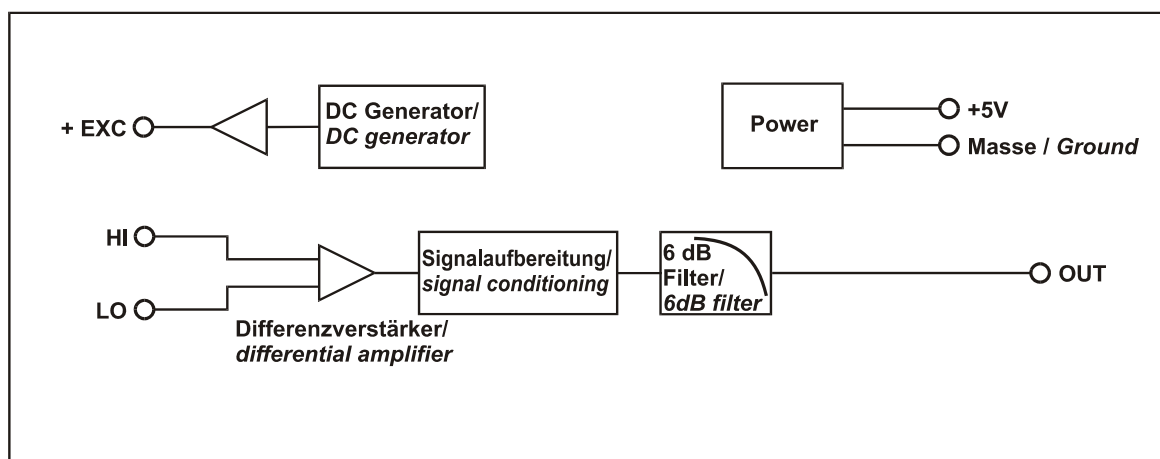
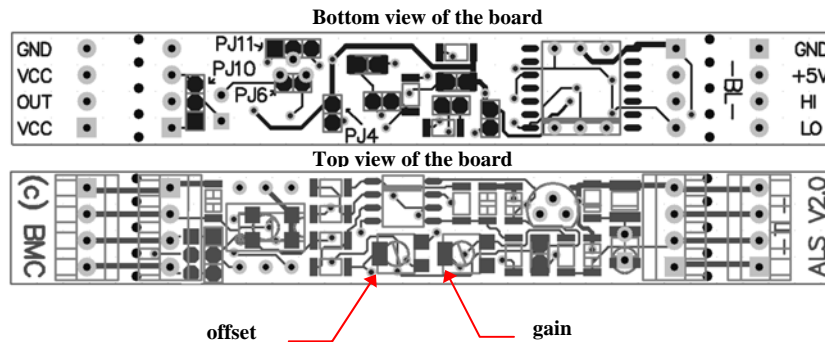


fig 1: block diagram ASL-xx (amplifier)

## 2 Installation and operating elements

The **ASL-xx** consists of a small board containing the semiconductor and the amplifier with sensor supply. It is adjusted ex works to 5V power supply. To supply the **ASL-xx** with 7V..28V open jumper PJ6 and connect the square pad of jumper PJ11 with the middle one.

At the output the **ASL-xx** is set to 0..5V ex works. The effective output amplitude is 0,1..4,9V. Closing jumper PJ4 sets the output signal to 0..2.5V. If necessary, offset and gain of the amplifier have to be calibrated.



## 3 Assembly and effective direction of the sensor

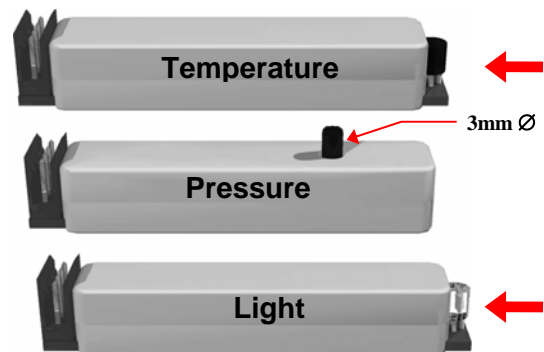


The effective direction of the light, pressure and acceleration sensor are illustrated in the figure on the right.

The **ASL-xx** can be mounted in different ways. Use double-sided adhesive tape or clamps for mounting. A plastic housing is included with delivery.

Depending on your application the **ASL-xx** and the housing can be modified as needed. Depending on the sensor the ends of the housing can be notched. For waterproof applications move the semiconductor into the housing by shortening the board and glue it (paste over, encapsulate). Use the label included with delivery to seal the housing.

In case of problems relating to EMC protect housing and connection cable by a shield.




## 4 Pin assignment of the output plug

The output signal has an effective range of 0.1..4.9V. Long lines or supply under 5V produce gain and offset errors. The supply of the **ASL-xx** is lead out to pin 4 ( $V_{cc}$ ) ex works. If using pin 2 ( $V_{cc2}$ ) for the connection to the CONRAD meteorological station connect the two round pads of PJ10 and change the cable.

Pin	Name	Function
4	VCC	+5V or +7 .. 28V DC
3	OUT	+0 .. 5V (2.5V) DC
2	VCC2	+5V or +7 .. 28V DC
1	GND	GND

## 5 Parametrizing example with NextView®

If using a measuring data acquisition program like e.g. NextView® the measuring channels can be presented as physical quantities. For the output voltage of the **ASL-xx** the following relations apply:

	<b>for ASL-T1:</b>	0V is equivalent to 0°C,	5V is equivalent to 100°C
	<b>for ASL-L2:</b>	0V is equivalent to 0μW/cm <sup>2</sup> ,	5V is equivalent to 25μW/cm <sup>2</sup>
	<b>for ASL-P1:</b>	0V is equivalent to -1bar,	5V is equivalent to +1bar

## 6 Applications and further information for the ASL-xx

All sensors have to be calibrated for the particular application.

- **Light sensor ASL-L2 for:** Illumination, light barriers, object and color recognition. The sensor features its highest sensitivity at a wave length of 880nm. The sensor must be calibrated for the respective application.
- **Temperature sensor ASL-T1 for:** Acquisition of the most various temperatures. The semiconductor is suitable for max. 100°C, but the **ASL-xx** amplifier board for 70°C only. If necessary separate semiconductor from **ASL-xx** by open ground.
- **Pressure sensor ASL-P1 for:** High and low pressure measurement, pulse and speed measurement with pitot tube, weighing facility with pressure gauge. The pressure sensor has a small hysteresis at zero. See for good density!

## 7 Important notes for using the ASL-xx

- For power supply an electrically isolated power unit (with CE) or a battery must be used.
- The **ASL-xx** sensors are only suitable for extra-low voltages – please observe the relevant regulations!
- If using an *ZU37CB/ZU37CO* connection board the **ASL-xx** sensors are connected to the respective channels. Power supply of the **ASL-xx** sensors is realized via the *ZU37CB/ZU37CO*.
- The housing of the **ASL-xx** is not shielded. In case of problems relating to EMC shield the housing and use screened cables. Connect the cable screen to ground at one end only. Open lines should be closed.
- The **ASL-xx** sensor ground is electrically connected to a possibly connected PC measuring card and therefore with the PC ground also. Very often the PC ground is earthed, too. Attention: Any earth or ground loops during sensor cabling will lead to measuring errors!
- If using without housing the **ASL-xx** board is not isolated. Absolutely avoid short circuits and ESD voltages! All accessible pins are electrostatic devices. Workplace must be conductive during installation.
- The sensors can be operated with an extension cable separated from the **ASL-xx** amplifier, if required.
- For cleaning the **ASL-xx** use water and mild detergent only.
- The **ASL-xx** is designed to be maintenance-free.
- In case of long lines or supply less than <5V the gain or offset adjustment may drift away. Recalibrate, if necessary.
- The device must not be used for safety-relevant jobs. By using or processing this product the customer becomes manufacturer by law and therefore is responsible for the proper installation, use and handling of the product. In the case of improper use or unauthorized interference our warranty ceases and any warranty claims are excluded.



Do not dispose of the product in the domestic waste or at any waste collection places. It has to be either duly disposed according to the WEEE directive or can be returned to bmcm at your own expense.

## 8 Technical data ASL-xx (typical at 20°C and 5V supply)

### • Measuring range

Product	Physical measuring quantity	Sensor	Measuring range	equivalent at the output
<b>ASL-T1</b>	temperature	LM35DZ (National)	0 .. 70° (100°) C	0V => 0°C; 5V => 100°C
<b>ASL-L2</b>	light	TSL250 (Texas)	0 .. 25µW/cm <sup>2</sup> at 880nm	0V => 0µW/cm <sup>2</sup> ; 5V => 25µW/cm <sup>2</sup>
<b>ASL-P1</b>	pressure	ADP1141 (NAIS)	±1bar	0V => -1bar; 5V => +1bar

output calibrated ex works at 0 .. 5V: 0 .. +5V DC central position at 2.5V (ASL-M9, ASL-P1 only)  
 or if changed with jumper (close PJ4): 0 .. +2.5V DC central position at 1.25V (ASL-M9, ASL-P1 only)

### • Accuracy (typical)

Adjustment range offset + gain (internal):	±10%
Amplifier accuracy:	±1%
Amplifier linearity:	0.1%
Amplifier temperature drift offset + gain:	100ppm/°C
Sensor accuracy dep. on sensor type:	±1%
Sensor linearity dep. on sensor type:	<1%

The values for accuracy have to be considered carefully, by calibrating you can usually reach a better accuracy in your application.

### • General

Output load // eff. output amplitude:	>1kΩ, recommended >100kΩ for 0.1% accuracy // 0.1V..4.9V
Output filter:	1-pole (6dB/Oct.) 50Hz
Power supply:	5V or 7V..28V DC; typ. 2mA, max. 5mA
Temperature range:	-25°C..+70°C
Relative humidity:	0..90% (not condensing)
CE standards:	EN61000-6-1, EN61000-6-3, EN61010-1; for decl. of conformity (PDF) visit <a href="http://www.bmcm.de">www.bmcm.de</a>
ElektroG // ear registration:	RoHS and WEEE compliant // WEEE Reg.-No. DE75472248
ESD stability:	max. 1000V
Guarantee:	2 years with effect from sales date, damages at product resulting from improper use excluded

### • Accessory (incl.)

Plastic housing with lable:	2 parts; 59x15x15mm
3-pole ribbon cable with plugs:	1m