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# LS 120-121 ILS 730-731

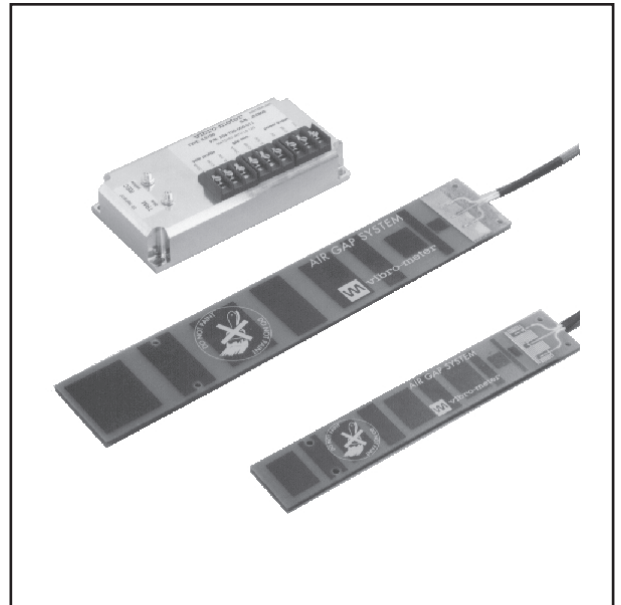
## Air Gap Measuring System LS 120-121 Transducers & ILS 730-731 Conditioners

### CHARACTERISTICS

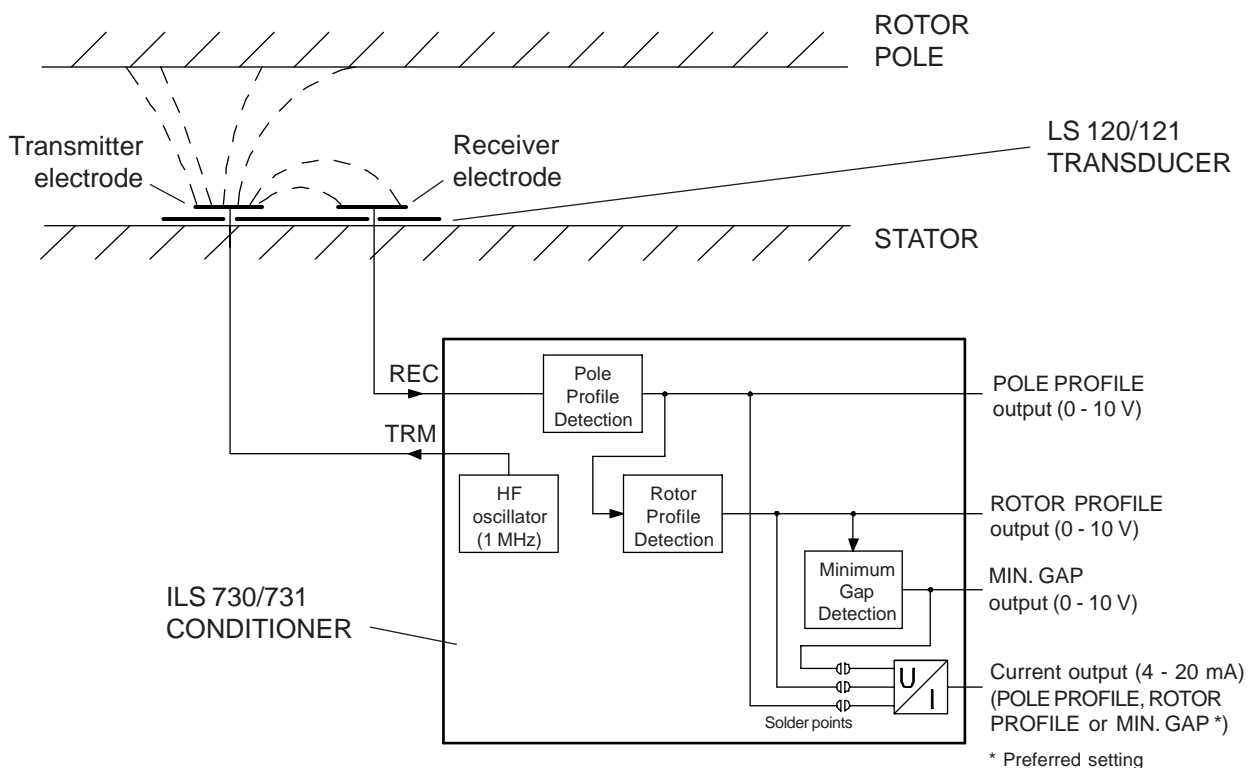
- Contactless measurement for alternators
- Electric field principle
- No wear-out
- Measuring range :
 

LS 120 + ILS 730	2 mm - 33 mm
LS 121 + ILS 731	15 mm - 65 mm
- Temperature range :
 

LS transducer	-15°C to +125°C
ILS conditioner	-25°C to +70°C
- Cable lengths of 5m and 10m



### Signal Processing Diagram :



**DESCRIPTION**

The air gap measuring system consists of a transducer (LS 120 or LS 121) and a signal conditioner / processor (ILS 730 or ILS 731), which are connected via a pair of coaxial cables. The LS 120 is matched with the ILS 730 and the LS 121 with the ILS 731.

The transducer contains two mutually insulated electrodes which are shielded on the rear side. An oscillator in the signal conditioner feeds a high-frequency voltage signal to the transmitter electrode, producing an electric field. Part of this field is picked up by a receiver electrode and is fed to a receiver circuit. The distance between the probe and the target (the rotor surface) affects the coupling of the electric field between the transmitter and receiver electrodes. Thus the modulated signal at the receiver output is proportional to the distance between the stator and the rotor of the alternator.

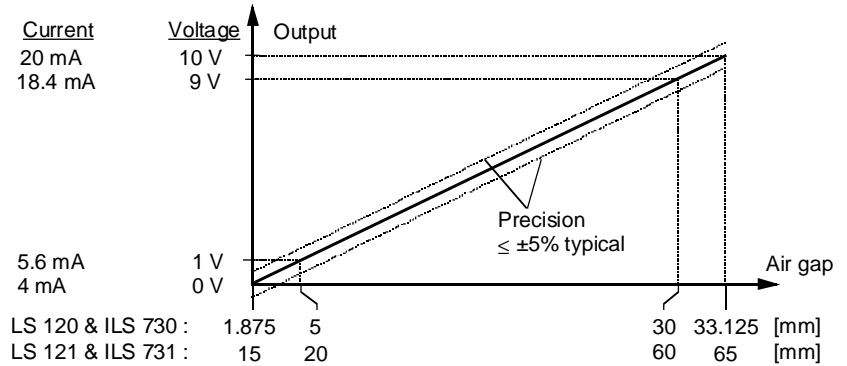
The system provides three voltage-based outputs (0 to 10 V), which are available on a screw terminal strip on the ILS 73x :

- The POLE PROFILE output indicates the instantaneous value between the transducer and the rotor,
- The ROTOR PROFILE output indicates the minimum value of the air gap for each pole,
- The MIN. GAP output reflects the minimum air gap value for all poles of the rotor.

In addition, one current output (4 to 20 mA) is provided for any one of the above 3 signals. The selection is made by factory-set solder points which are placed according to the option chosen when ordering (see Ordering Information).

**OPERATING CHARACTERISTICS :**

**Transfer characteristics :**



**Measuring range and output sensitivity**

- LS 120 + ILS 730 : 1.875 to 33.125 mm, output sensitivity 320 mV/mm or 512  $\mu$ A/mm
- LS 121 + ILS 731 : 15 to 65 mm, output sensitivity 200 mV/mm or 320  $\mu$ A/mm

**Temperature drift**

- On zero (mean gap 5 VDC) :  $\leq 200$  ppm / K
- On sensitivity :  $\leq 200$  ppm / K

**Power supply**

: 18 to 32 VDC, nominal 24 VDC, 150 mA, galvanically separated. Start-up current 600 mA, 60 ms at 24 VDC.

**Voltage outputs (0 to 10 V)**

- Impedance :  $< 20 \Omega$
- Minimum load resistance : 1k $\Omega$

**Current output (4 to 20 mA)**

- Maximum load resistance : 500  $\Omega$

**POLE PROFILE Output**

Frequency range : DC to 1 kHz

**ROTOR PROFILE Output**

- Trigger level : 10 V  $\pm 0.5$  V
- Hysteresis : 0.5 V

**MIN. GAP Output**

- Peak rectifier
- Rise time : 1 ms
- Decay time : 50 s

**CONSTRUCTION**

**Materials used :**

- LS 12x transducers : Fibre glass, type Vetronit FR4
- Integral cable : Pair of blue coaxial cables, protected by a common shield and black FEP insulation
- ILS 73x conditioners : Moulded aluminium enclosure, having IP 40 protection class, to be mounted in an ABA 15x industrial housing (IP 65), or similar

# SPECIFICATIONS AND DIMENSIONS

# LS 120-121 and ILS 730-731

## ENVIRONMENTAL

### Temperature range

- Operation (LS) : -15°C to +125°C for LS 12x, -25°C to +70°C for ILS 73x
- Short-term (LS) : -40°C to +150°C for LS 12x, -40°C to +80°C for ILS 73x

### Humidity

: Max. 95% non condensing (operation and storage)

### Vibration

: IEC 68.2.27 standard; 0.7 mm pp, 5 g peak, 10 to 150 Hz

### Shock

: IEC 68.2.27 standard; 15 g peak, 11 ms half sine wave

### EMC

: According to EN 50081-2 and EN 50082-2;  
Withstands 1.5 Tesla in a 50 or 60 Hz magnetic field

### Fluid compatibility

- LS 120/121 : Contact with liquids strongly influences measurements.  
Contact with solvents and acids should be avoided.

### Accessories :

ABA 151 Industrial Housing for 1 ILS 73X conditioner  
ABA 153 Industrial Housing for 2 ILS 73X conditioners

### Ordering Information :

To order please specify :

- Type and designation : **LS 120 / LS 121 Air gap transducer**
- Ordering number : See table below

Transducer	Length 5 m	Length 10 m
LS 120	151-120-000-02	151-120-000-12
LS 121	151-121-000-02	151-121-000-12

- Type and designation : **ILS 730 / ILS 731 Air gap signal conditioner**
- Ordering number : See table below

4-20 mA Output	ILS 730 Conditioner (for LS 120)		ILS 731 Conditioner (for LS 121)	
	Length 5 m	Length 10 m	Length 5 m	Length 10 m
MIN. GAP	204-730-000-02	204-730-000-12	204-731-000-02	204-731-000-12
ROTOR PROFILE	204-730-000-03	204-730-000-13	204-731-000-03	204-731-000-13
POLE PROFILE	204-730-000-04	204-730-000-14	204-731-000-04	204-731-000-14

### Designation

Adhesive for LS 12x transducers, 2 components, methacrylate, operation up to 80°C, contents 80 g, for 2 x LS 121 or 3 x LS 120 transducers

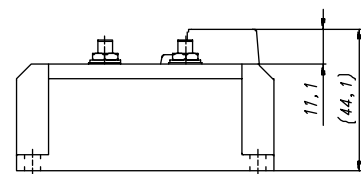
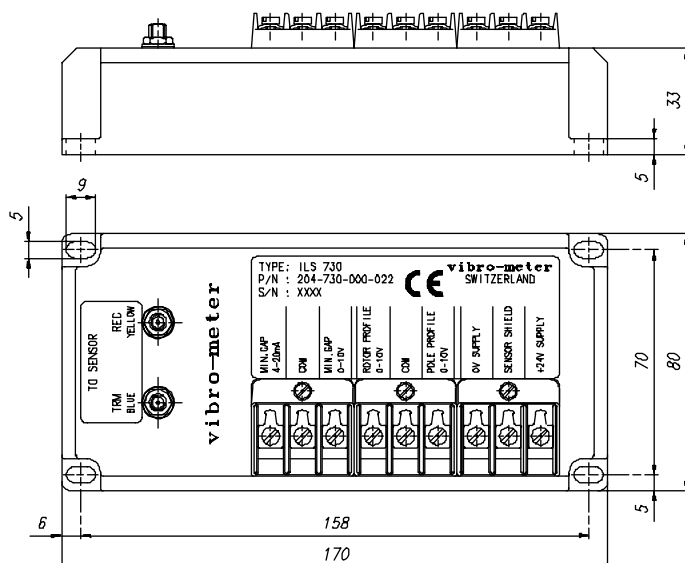
### Ordering Number

965.06.01.0330

Adhesive for LS 12x transducers, 2 components, epoxyde, operation up to 125°C, contents 400 g, for 8 x LS 121 or 16 x LS 120 transducers

965.06.02.7110

### ILS 730 / ILS 731:

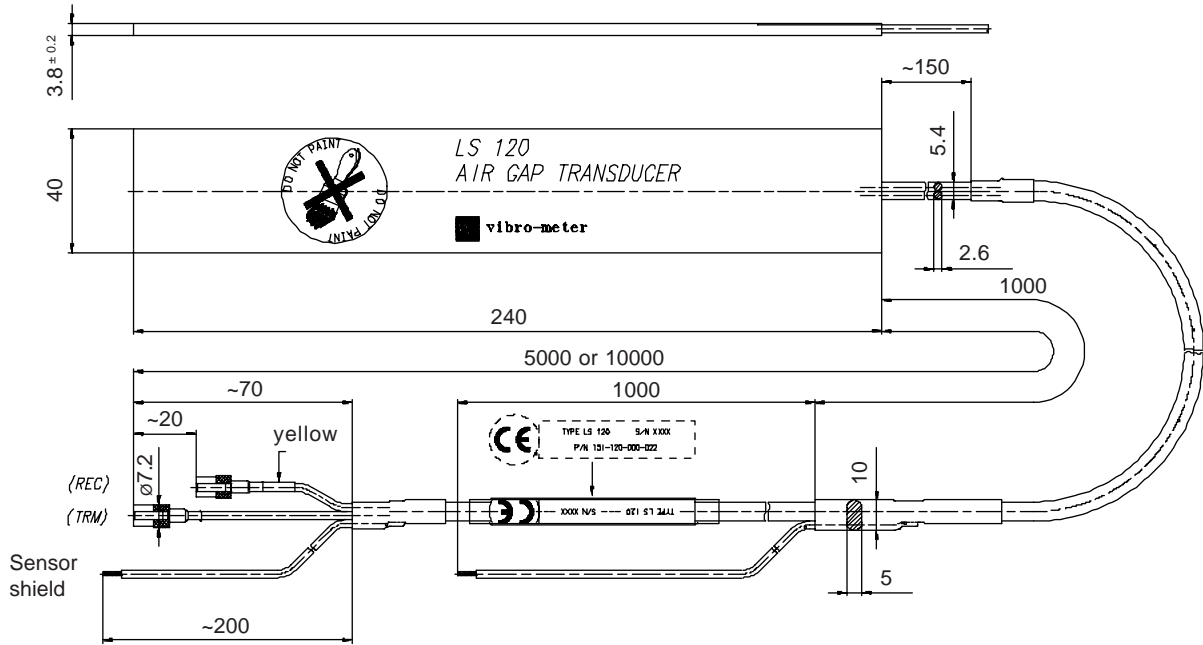


Example showing label for ILS 730 conditioner with current output for MIN. GAP (P/N 204-730-000-022)

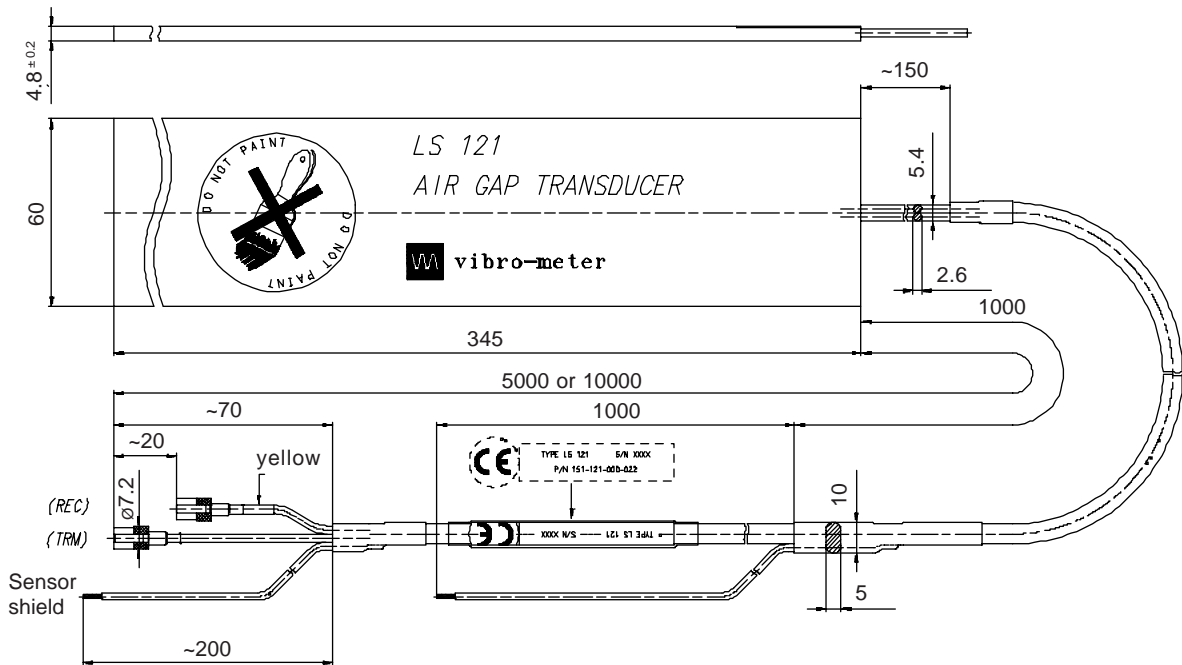
**DIMENSIONS**

**LS 120-121 and ILS 730-731**

**LS 120 :**



**LS 121 :**



Due to the continual development of products, Vibro-Meter reserves the right to modify these specifications without forewarning.



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