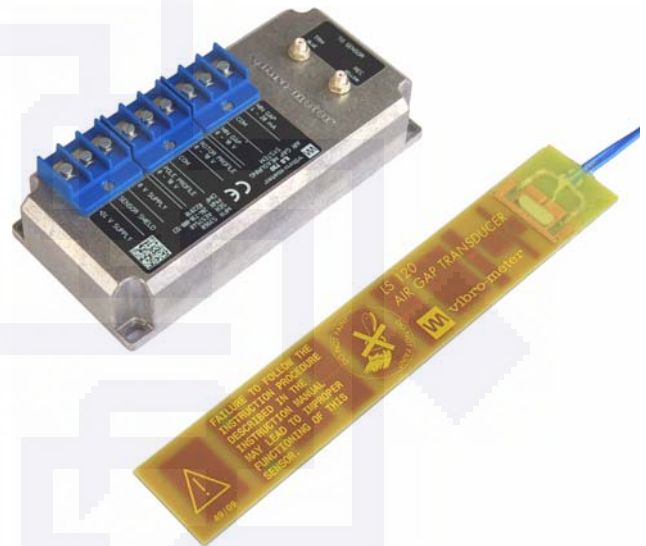


LS 120 and ILS 730

Air Gap Measuring System LS 120 transducer and ILS 730 signal conditioner

FEATURES

- Contactless measurement for alternators
- Electric field principle
- No wear-out
- 2 mm to 33 mm measurement range
- Operating temperature ranges:
-15°C to +125°C for the LS 120 transducer
-25°C to +70°C for the ILS 730 conditioner
- Cable lengths of 5 m and 10 m
- Enhanced filtering of noise and spikes induced by high excitation currents



DESCRIPTION

The air gap measuring system consists of a LS 120 transducer with an integral cable and an ILS 730 signal conditioner. The two devices are connected via the integral cable of the transducer, which is a pair of coaxial cables.

The LS 120 transducer contains two mutually insulated electrodes (transmitter and receiver) which are shielded on the rear side. The ILS 730 contains the electronic circuitry that excites the transducer and processes the measurement signals returned.

An oscillator in the signal conditioner feeds a high-frequency signal to the transmitter electrode of the

transducer and produces an electric field. Part of this field is picked up by the receiver electrode of the transducer and is sent to the receiver circuitry.

When the transducer is mounted on the stator of a machine, the distance between the transducer and the rotor surface (the target) affects the coupling of the electric field between the transmitter and receiver electrodes. In this way, the modulated signal at the receiver output is proportional to the distance between the stator and the rotor of the alternator.

The air gap system provides three output signals: POLE PROFILE, ROTOR PROFILE and MIN GAP.



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DESCRIPTION (Continued)

The POLE PROFILE output indicates the instantaneous value between the transducer and the rotor.

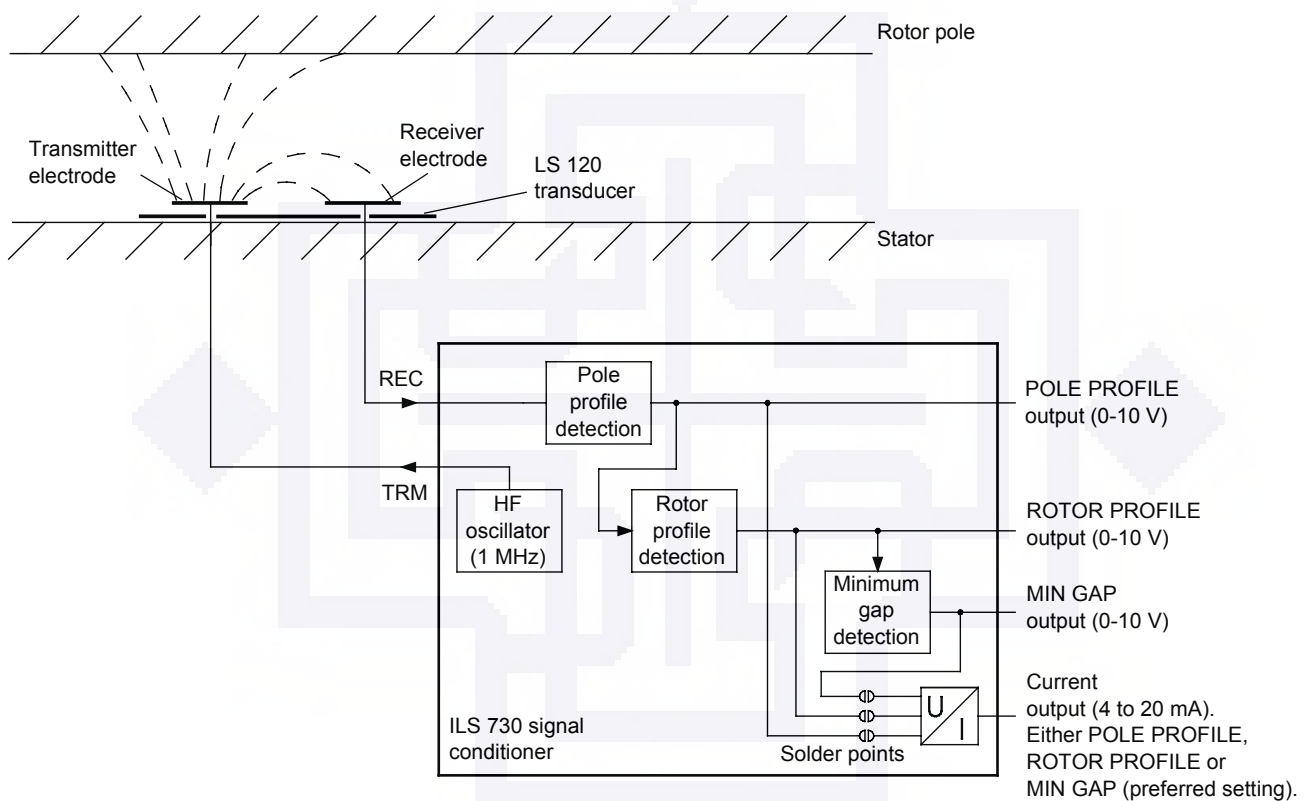
The ROTOR PROFILE output indicates the minimum value of the air gap for each pole.

The MIN GAP output reflects the minimum air gap value for all poles of the rotor.

Each of these measurements is available as a voltage-based (0 to 10 V) output. In addition, one of these measurements can be selected to be also available as a current-based (4 to 20 mA) output. The selection is made by factory-set solder points which are placed according to the option chosen when ordering (see Ordering Information).

All these outputs are available on a screw terminal strip on the ILS 730.

BLOCK DIAGRAM



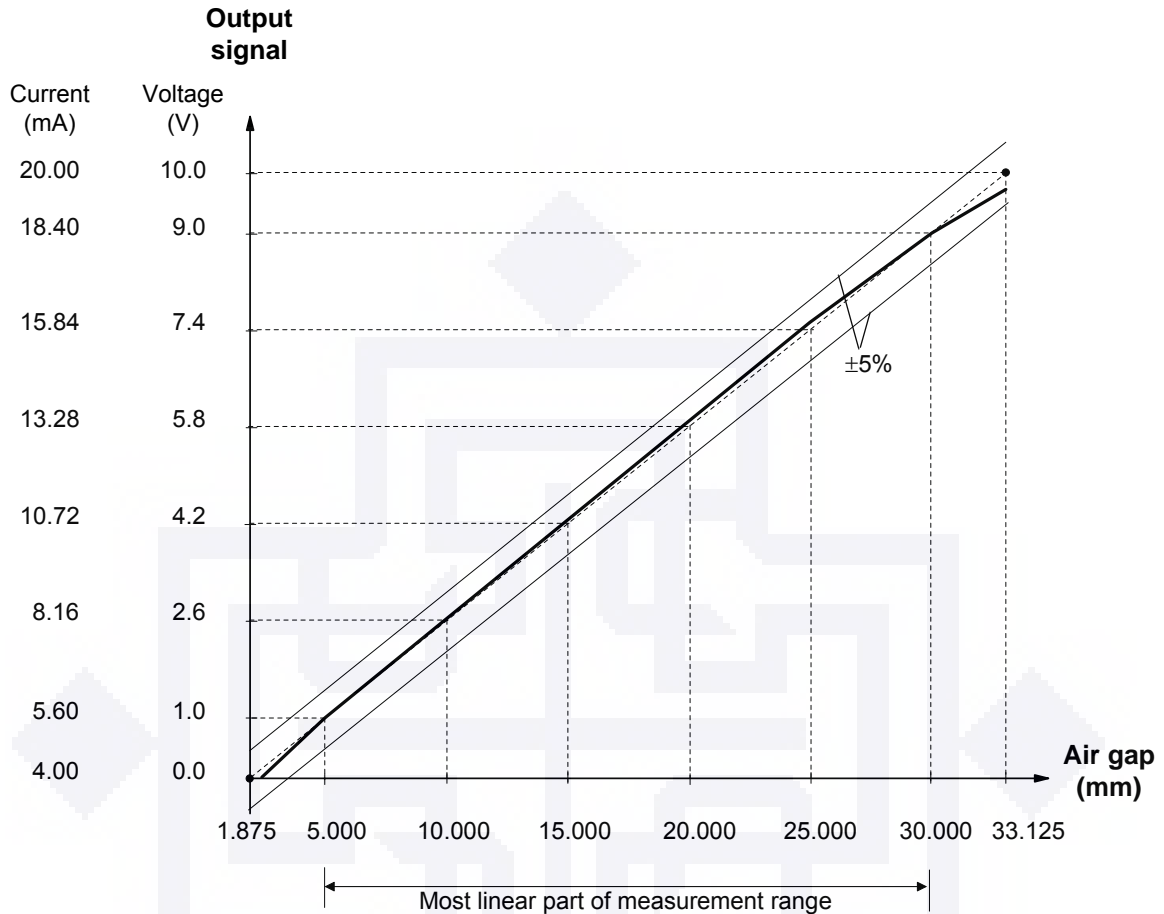
SPECIFICATIONS

OPERATING

Measurement range	: 1.875 to 33.125 mm
Output sensitivity	: 320 mV/mm or 512 μ A/mm
Precision	: Typically $\leq \pm 5\%$ of FSD
Temperature drift	
• On zero (mean gap 5 V _{DC})	: ≤ 200 ppm/K
• On sensitivity	: ≤ 200 ppm/K

SPECIFICATIONS (Continued)

TRANSFER CHARACTERISTIC



OUTPUT CHARACTERISTICS

Voltage outputs (0 to 10 V)

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

Current output (4 to 20 mA)

- Maximum load resistance : 500Ω

POLE PROFILE output

- Frequency range : DC to 1 kHz

ROTOR PROFILE output

- Trigger level : $10 \text{ V} \pm 0.5 \text{ V}$
- Hysteresis : 0.5 V

MIN GAP output

- Peak rectifier rise time : 1 ms
- Peak rectifier decay time : 50 s

SUPPLY

- Voltage : 24 V_{DC} nominal, 18 to 32 V_{DC} input range (galvanically separated)
- Current : 150 mA nominal (600 mA start-up current, 60 ms at 24 V_{DC})

SPECIFICATIONS (Continued)

MATERIALS USED

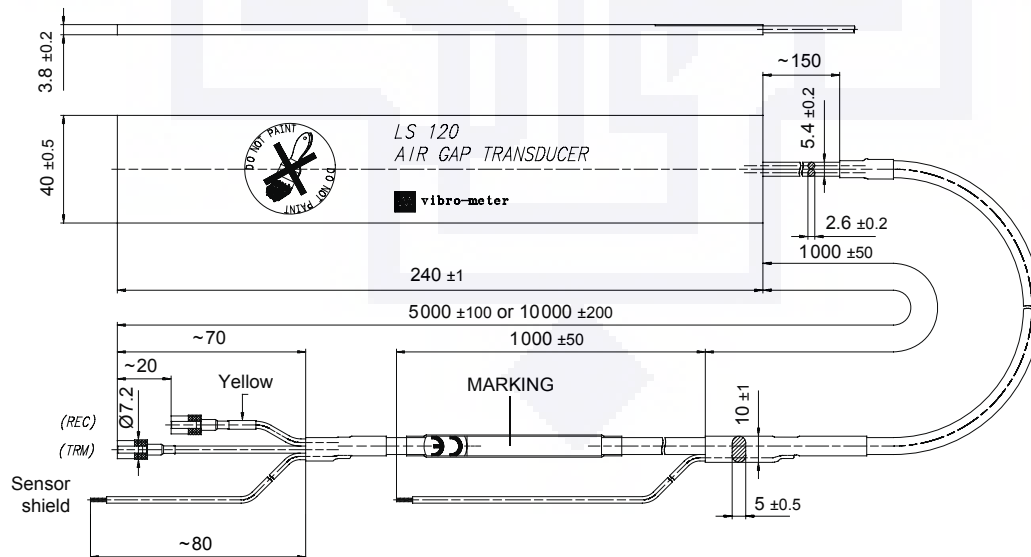
LS 120 transducer	: Vetronit FR4 type fibre glass
Integral cable	: Pair of blue coaxial cables, protected by a common shield and black FEP insulation
ILS 730 conditioner	: Moulded aluminium enclosure with protection rating of IP 40, to be mounted in an ABA 15x industrial housing (IP 65), or similar

ENVIRONMENTAL

Temperature range	
• <i>Operating</i>	: -15°C to +125°C for LS 120, -25°C to +70°C for ILS 730
• <i>Short-term</i>	: -40°C to +150°C for LS 120, -40°C to +80°C for ILS 730
Humidity	: Max. 95% non condensing (operation and storage)
Vibration	: IEC 68.2.27 standard – 0.7 mm peak-peak, 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	: Contact with liquids strongly influences measurements. Contact with solvents and acids should be avoided.

MECHANICAL DRAWINGS AND ORDERING INFORMATION

LS 120 air gap transducer

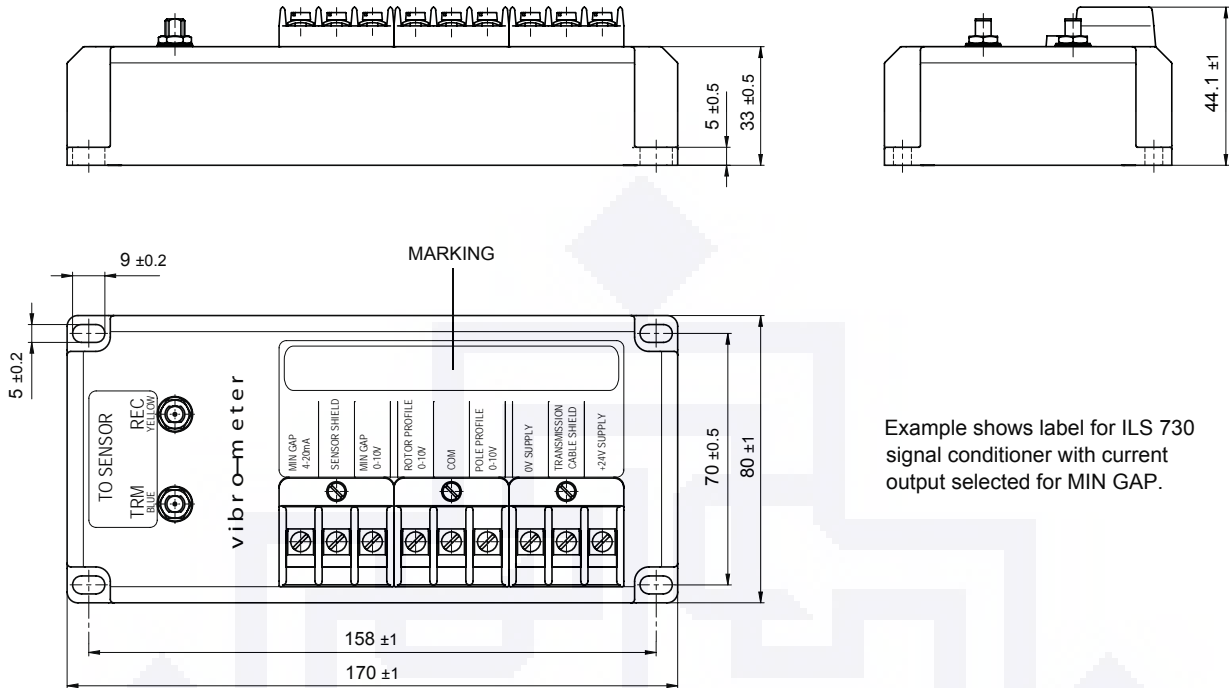


To order, please specify:

Type	Designation	Ordering Number
LS 120	LS 120 air gap transducer – 5 m length integral cable	151-120-000-023
LS 120	LS 120 Air gap transducer – 10 m length integral cable	151-120-000-123

MECHANICAL DRAWINGS AND ORDERING INFORMATION (Continued)

ILS 730 signal conditioner



Example shows label for ILS 730 signal conditioner with current output selected for MIN GAP.

To order, please specify:

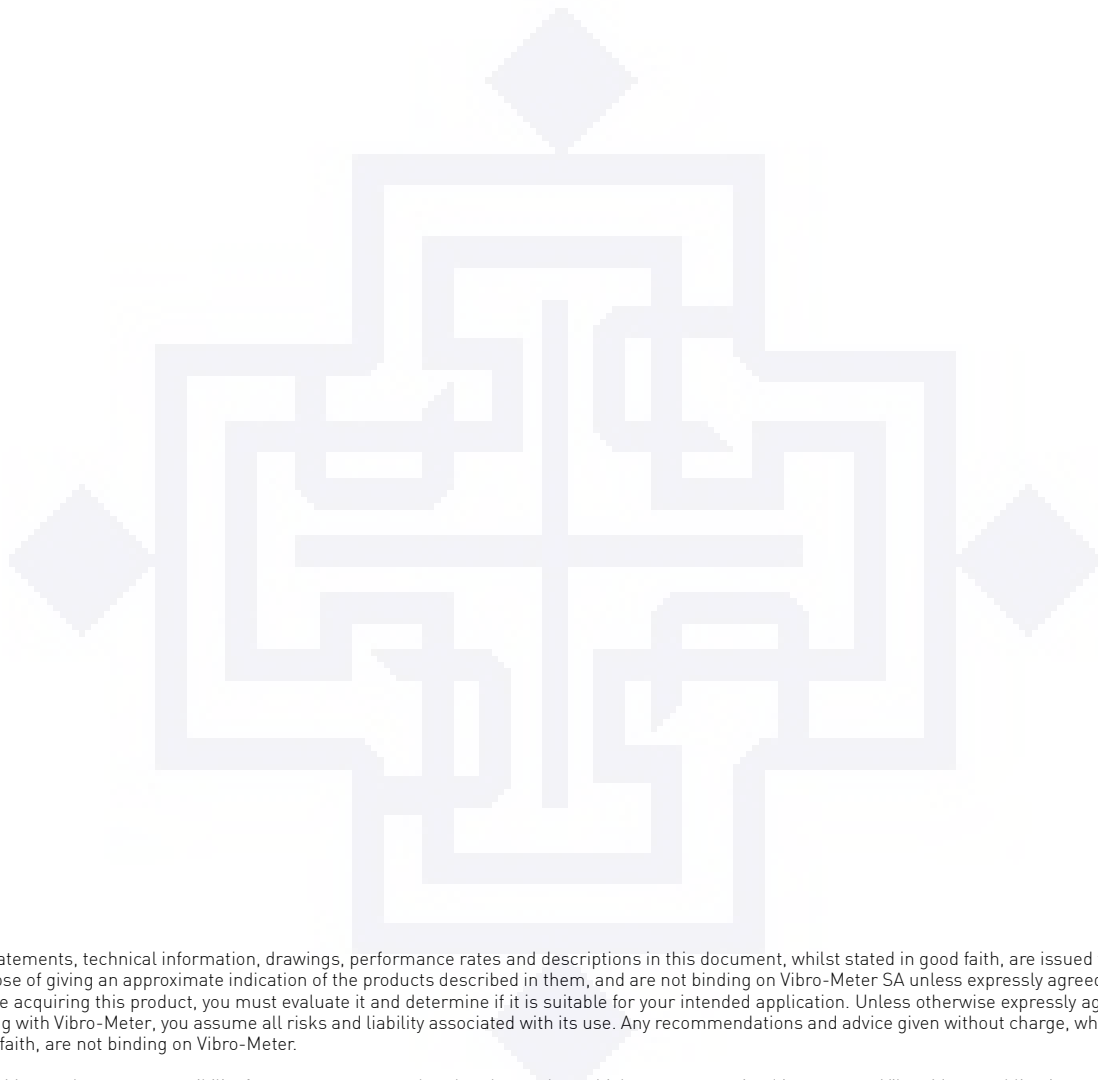
Ordering number: 204-730-000-201 / **B** — **H**

4-20 mA OUTPUT (B)	
MIN GAP	1
ROTOR PROFILE	2
POLE PROFILE	3

LENGTH (H)	
5 m	05
10 m	10

ACCESSORIES

Type	Designation	Ordering Number
EPO-TEK	Adhesive for LS 120 transducers – 2 components, epoxyde, contents 400 g, for up to sixteen LS 120 transducers. Operation up to 125 °C.	965.06.02.7110
Loctite	Adhesive for LS 120 transducers – 2 components, methacrylate, contents 80 g, for up to three LS 120 transducers. Operation up to 80 °C.	965.06.01.0330
ABA 151	Industrial housing for one ILS 730 conditioner	See data sheet no. 265-422
ABA 153	Industrial housing for two ILS 730 conditioners	See data sheet no. 265-423



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