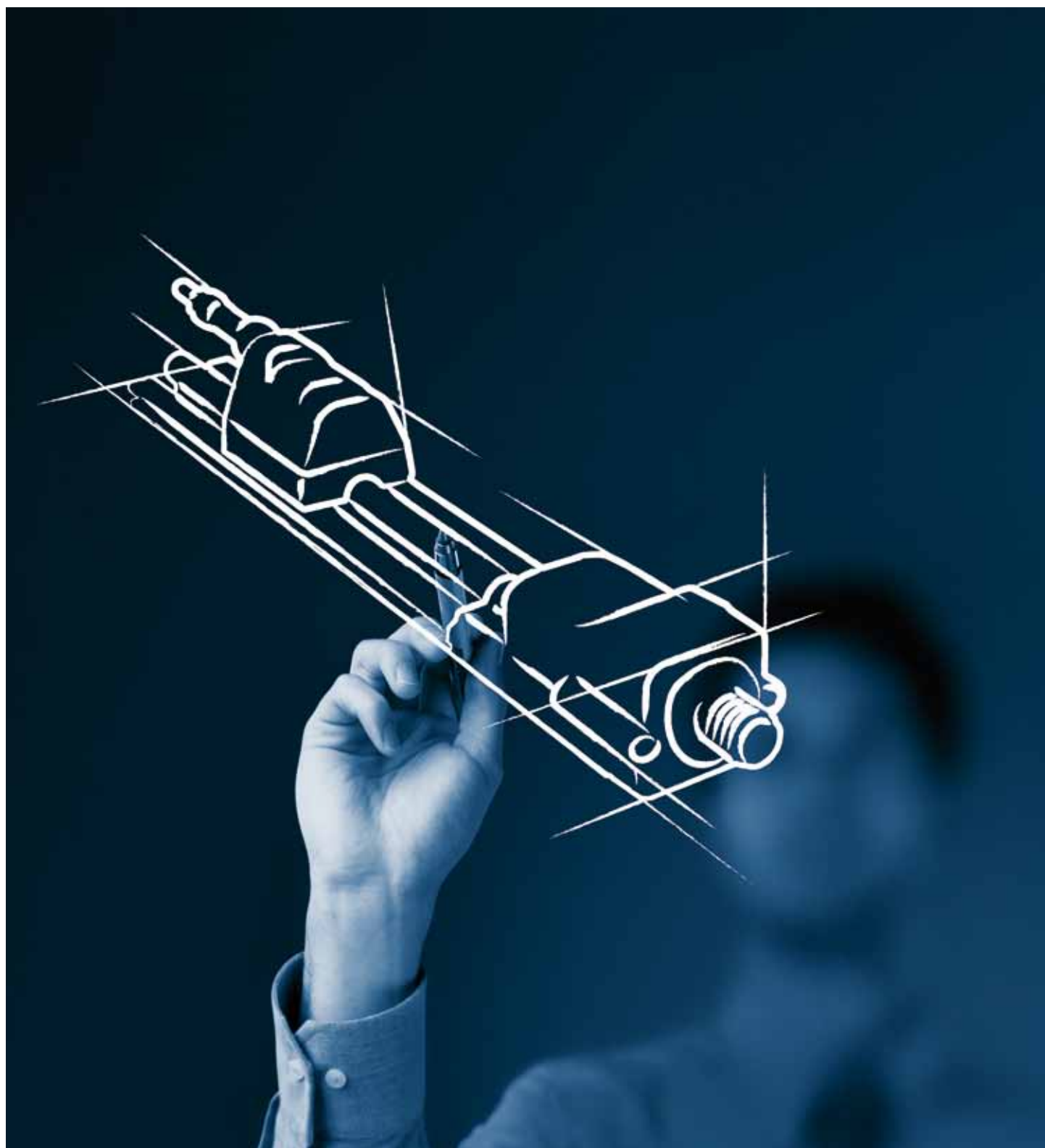


MEASUREMENT POSITION TRANSDUCERS

GEFRAN





THE ACKNOWLEDGED INTERNATIONAL LEADER

Thanks to forty years of experience, GEFran is the world leader in the design and production of solutions for **measuring, controlling, and driving industrial production processes**.

We have 14 branches in 12 countries and a network of over 80 worldwide distributors.



QUALITY AND TECHNOLOGY

GEfran has been designing and manufacturing position sensors for over 40 years.

More than a million transducers installed and an in-depth knowledge of measurement processes guarantee performance and an elevated quality/price ratio.

GEfran is the **manufacturer of the sensitive component** of its transducers and is thus able to guarantee product reliability and precision of measurement.

GEfran's position transducers are based on **two different technologies**: firstly, **potentiometric** technology providing a broad flexible range developed over the years; secondly, **magnetostrictive** technology that provides fully-developed solutions with superior performance thanks to the non-contact measurement system.

PLASTIC AND RUBBER INJECTION PRESSES



MATERIAL PROCESSING



GEOTECHNICS



AGRICULTURAL AND EARTH-MOVING MACHINES



RENEWABLE ENERGIES





Characteristics of Gefran's position transducers:

- **Measures the definite position:** upon switching the system on, the transducer immediately reads the actual position without having to perform any mechanical repositioning.
- **Extensive lifespan:** from 100 million manoeuvres of the potentiometric transducers to the virtually unlimited lifespan of the magnetostrictive transducers as a result of the lack of contact between the transducer and its position reader.
- **High resolution output signal:** practically infinite for the potentiometers and 2μ for the magnetostrictive transducers.
- **Easy installation and simple connection** to the most common tools and PLCs on the market.
- **Manages cursors using** the same transducer and reads the speed of movement (MK4/IK4-C in CANopen up to 4 cursors; analogue MK4-A up to a maximum of two cursors).
- Rod from 10 mm up to 4000 mm



SERVICES

PRE AND POST SALES

A team of Gefran experts works with the customer to select the ideal product for its application and to help install and configure devices (customer@gefran.com).

TRAINING

Gefran offers a wide range of courses at different levels for the technical-commercial study of the Gefran product range as well as specific courses on demand.

MARKETS



BLOWING MACHINES



HYDRAULIC AND PNEUMATIC CYLINDERS



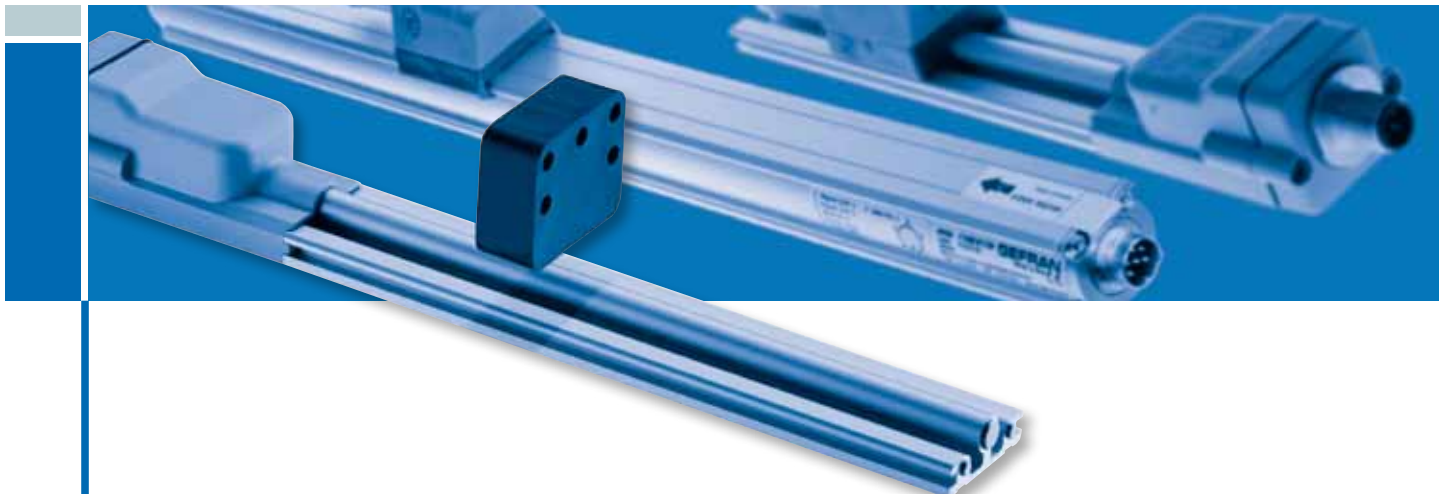
TEST MACHINES FOR AUTOMOTIVE SECTOR



FOOD INDUSTRY



LEVEL CONTROL



THE NEW MAGNETOSTRICTIVE SOLUTION



Further to constant research and innovation, the new technological solution ONDA employs a novel sensitive component to measure magnetic cursors.

The structure of the sensitive component has been simplified and optimised thanks to various unique solutions developed and patented by GEFran.

The ONDA solution condenses the performances required to cope with major application needs into a simple structure:

- **a simplified sensitive component** which enables for the size of the transducer to be further reduced
- **a simple and modular structure** allowing for greater reliability and ease of maintenance
- **unique solutions** which guarantee maximum performance in its class.

GUIDE TO SELECTION

IP40	IP60	IP65	IP67	IP68
PK	LT	LT	RK2 - RK4	IC
PA1	PZ12	PC	MK4	
PY1	PZ34	PR65	IK4/SK4	
PY2		ONP1	PME	
PY3		ONPP	PMA	
PS			LT67	
			PC67	
			PZ67	
			PMI / PMISL / PMISLE	
			RK5 (IP69K installed)	

LEVEL OF PROTECTION

According to the structure and technology used, GEFran's linear position transducers are able to provide different levels of protection against dust and liquids. Ranges from IP40 to IP68 can be chosen, according to the following table

COMMUNICATION INTERFACE

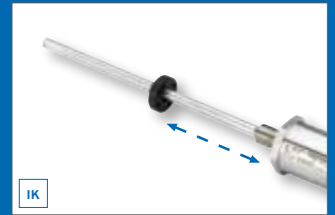
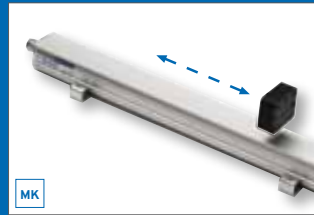
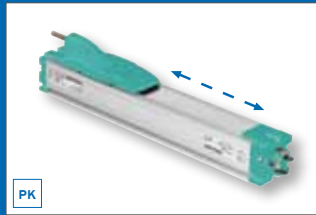
The potentiometers provide a ratiometric voltage output. This means that the range of output voltage depends on the voltage used to power the transducer.

WARNING! The potentiometer must not be used as a variable resistor.

If you wish to obtain a conditioned signal 0..10 Vdc or 4..20 mA as the potentiometer's output, a PCIR signal conditioner can be connected to the output of the device.

The magnetostriuctive transducers, on the other hand, allow you to choose the output interface that best suits your application needs:

- analogue voltage output: 0..5Vdc/5..0Vdc, 0..10Vdc/10..0Vdc
- analogue current output: 0..20mA, 4..20mA
- SSI output: 16, 21, 24, 25 bit binary or Gray code
- CANopen output: CiA DP 3.01 rel.4.0 and DS406



STROKE LENGTH

When choosing a transducer, it is important to remember that two different strokes exist:

- **Mechanical stroke:** the actual shift that the transducer's cursor is able to make;
- **Useful electrical stroke:** the part of the mechanical stroke in which transducer linearity is guaranteed.

Therefore, when designing an application, you should choose a transducer with a useful electrical stroke that is equal to or greater than the maximum displacement carried out by the moving part.

TYPES OF ACTUATORS

In order to measure the displacement of an object, the transducer has a mobile part that is usually attached to the object itself.

Two types of mobile parts are normally used:

- **stem:** the classical system used by potentiometers which consists of a rod connected to the transducer's body that transmits the shift to the inner parts of the sensor;
- **cursor:** a system that provides for more compact solutions thanks to the use of a cursor which becomes integral with the moving part to be measured.

It is available on certain potentiometers (PK, PME and PMI series) and on most magnetostrictive transducers.

It should be noted that the cursor can be guided (slide or ring) or totally free with respect to the transducer (floating cursor).

3 FASTENING SYSTEMS

Three types of supports can be used to install the transducer:

- **brackets:** the most traditional method; a free surface and two or more brackets according to the length of the transducer are required to install the transducer.
- **flanges:** ideal for applications where the stem needs to pass through a hole and the transducer needs to be fixed on the walls of the hole; the conditions of use need to be considered, especially in relation to high strokes;
- **self-aligning articulated joints:** used to fasten the ends of the transducer directly to the moving parts; other fastening points can be eliminated and offset movements can be measured; this system is not intended for particularly long strokes.

GUIDE TO SELECTION OF TRANSDUCER

POTENTIOMETRIC TECHNOLOGY



INSTALLATION	STROKES	MECHANICS
Standard	Long strokes	Stem
		Cursor
		Cursor with magnetic drag
	Short strokes (compact)	
Comparator		Ball pin
		Bearing pin
In cylinder	Short strokes (compact)	
	Long strokes	

MAGNETOSTRICTIVE TECHNOLOGY



INSTALLATION	MECHANICS
Standard	Profile
In cylinder	Threaded head
	Flanged head

	MOUNTING	HOUSING	PROTECTION	OUTPUTS	SERIES
	With brackets		IP60/65		SERIE LT
			IP67		SERIE LT67
	With aligning nodes		IP65		SERIE PC
			IP67		SERIE PC67
					SERIE PK
	With brackets				SERIE PME
	With aligning nodes				SERIE PMA
	With brackets	Standard			SERIE PA1
		With double shaft support			SERIE PY1
	Cylindrical body, universal mount	Diameter 1/2"			SERIE PZ12
		Diameter 3/4"	IP60		SERIE PZ34
			IP67		SERIE PZ67
					SERIE PY2
					SERIE PY3
					SERIE IC
		Diameter 12,7 mm		Potentiometric	SERIE PMI-SL
				Analogue 4...20mA	SERIE PMI-SLE
		Diameter 16 mm		Potentiometric with high linearity	SERIE PMI

	PERFORMANCE	INTERFACE	SERIES
	Optimised version		SERIE ONP1-A
	Pneumatic cylinders version		SERIE ONPP-A
	High performance	Analogue	SERIE MK4-A
		SSI	SERIE MK4-S
		CANopen	SERIE MK4-C
	Optimised version		SERIE RK4
	High performance	Analogue	SERIE IK4-A/SK4-A
		SSI	SERIE IK4-S
		CANopen	SERIE IK4-C
	Optimised version	Analogue	SERIE RK2
	High performance	Analogue	SERIE RK5

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