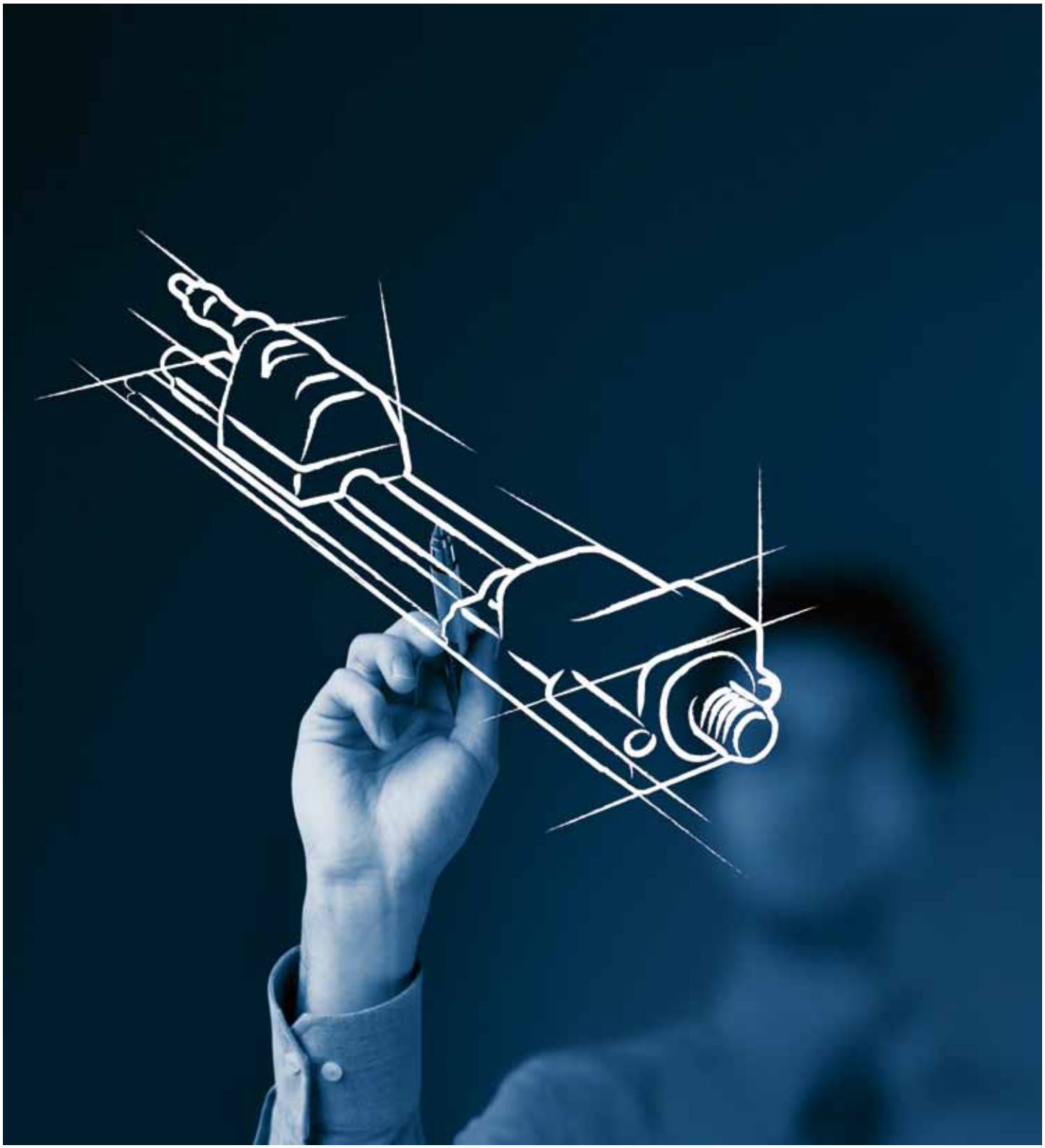
ENG

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.

GEFRAN

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 (customercare@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

ONDA

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

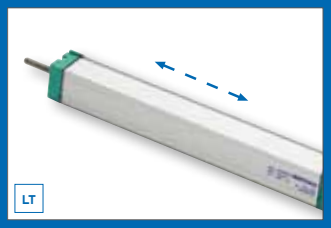
According to the structure and technology used, GEFRAN's linear position transducers are able to provide different levels of protection against dust and liquids. Ranges from IP40 to IP68 can be chosen, according to the following table

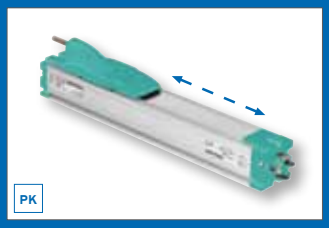
COMMUNICATION INTERFACE

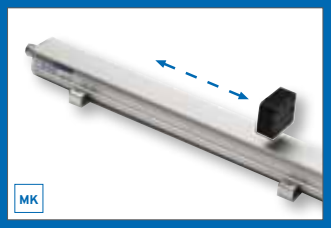
The potentiometers provide a ratiometric voltage output. This means that the range of output voltage depends on the voltage used to power the transducer.
WARNING! The potentiometer must not be used as a variable resistor.
If you wish to obtain a conditioned signal 0..10 Vdc or 4..20 mA as the potentiometer's output, a PCIR signal conditioner can be connected to the output of the device.

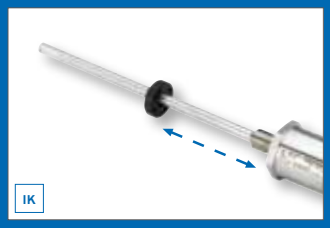
The magnetostrictive transducers, on the other hand, allow you to choose the output interface that best suits your application needs:

- 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

n 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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GEFRAN

GEFRAN HEADQUARTER
Via Sebina, 74
25050 PROVAGLIO D'ISEO (BS) ITALY
Ph. +39 03098881
Fax +39 0309839063

Drive & Motion Control Unit
Via Carducci, 24
21040 GERENZANO (VA) ITALY
Ph. +39 02967601
Fax +39 029682653
info.motion@gefran.com

Technical Assistance:
technohelp@gefran.com

Customer Service
motioncustomer@gefran.com
Ph. +39 02 96760500
Fax +39 02 96760278

GEFRAN BENELUX NV
ENA 23 Zone 3, nr. 3910
Lammerdries-Zuid 14A
B-2250 OLEN
Ph. +32 (0) 14248181
Fax +32 (0) 14248180
info@gefran.be

GEFRAN DEUTSCHLAND GmbH
Philipp-Reis-Straße 9a
D-63500 Seligenstadt
Ph. +49 (0) 61828090
Fax +49 (0) 6182809222
vertrieb@gefran.de

SIEI AREG - GERMANY
Gottlieb-Daimler Strasse 17/3
D-74385 - Pleidelsheim
Ph. +49 (0) 7144 897360
Fax +49 (0) 7144 8973697
info@sieiareg.de

GEFRAN SUISSE SA
Sandackerstrasse, 30
9245 Oberbüren
Ph. +41 71 9554020
Fax +41 71 9554024
office@gefran.ch

SENSORMATE AG
Steigweg 8,
CH-8355 Aadorf, Switzerland
Ph. +41(0)52-2421818
Fax +41(0)52-3661884
http://www.sensormate.ch

GEFRAN FRANCE SA
4, rue Jean Desparmet - BP 8237
69355 LYON Cedex 08
Ph. +33 (0) 478770300
Fax +33 (0) 478770320
commercial@gefran.fr

GEFRAN UK Ltd
Capital House, Hadley Park East
Telford
TF1 6QJ
Ph. +44 (0) 8452 604555
Fax +44 (0) 8452 604556
sales@gefran.co.uk

GEFRAN ESPAÑA
Calle Vic, números 109-111
08160 - MONTMELÓ
(BARCELONA)
Ph. +34 934982643
Fax +34 935721571
comercial.espana@gefran.es

GEFRAN MIDDLE EAST ELEKTRIK VE ELEKTRONIK San. ve Tic. Ltd. Sti
Yesilkoy Mah. Ataturk
Cad. No: 12/1 B1 Blok K:12
D: 389 Bakirkoy /Istanbul TURKIYE
Ph. +90212 465 91 21
Fax +90212 465 91 22

GEFRAN SOUTH AFRICA Pty Ltd.
Unit 10 North Precinet
West Building
Topaz Boulevard Montague Park,
7411, Cape Town
Ph. +27 21 5525985
Fax +27 21 5525912

GEFRAN SIEI
Drives Technology Co., Ltd
No. 1285, Beihe Road, Jiading
District, Shanghai, China 201807
Ph. +86 21 69169898
Fax +86 21 69169333
info@gefransiei.com.cn

GEFRAN SIEI
Electric Pte. Ltd.
No. 1285, Beihe Road, Jiading
District, Shanghai, China 201807
Ph. +86 21 69169898
Fax +86 21 69169333
info@gefransiei.com.cn

GEFRAN SIEI - ASIA
31 Ubi Road 1
#02-07, Aztech Building
Singapore 408694
Ph. +65 6 8418300
Fax +65 6 7428300
info@gefan.com.sg

GEFRAN INDIA
Survey No: 182/1 KH, Bhukum, Paud road,
Taluka - Mulshi,
Pune - 411 042. MH, INDIA
Phone No.:+91-20-39394400
Fax No.: +91-20-39394401
gefran.india@gefran.in

GEFRAN TAIWAN
No.141, Wenzhi Rd., Zhongli City,
Taoyuan County 32054,
Taiwan (R.O.C.)
Ph. +886-3-4273697
eddie.liao@gefransiei.com.sg

GEFRAN Inc.
8 Lowell Avenue
WINCHESTER - MA 01890
Toll Free 1-888-888-4474
Fax +1 (781) 7291468
info.us@gefran.com

GEFRAN BRASIL ELETROELETRÔNICA
Avenida Dr. Altino Arantes,
377 Vila Clementino
04042-032 SÃO PAULO - SP
Ph. +55 (0) 1155851133
Fax +55 (0) 1132974012
comercial@gefran.com.br

bsi. ISO 9001 Quality Management
FM 608910

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www.gefran.com