

ENG

MOBILE HYDRAULIC  
**SOLUTIONS**  
BY GEFTRAN:  
MATERIAL HANDLING  
CONSTRUCTION  
ROAD BUILDING  
&  
AGRICULTURAL EQUIPMENT

**GEFRAN**



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## Gefran. You know we are there

Fifty years of experience and vast know-how, a company that puts client needs at the forefront and constant technological innovation make Gefran a leader in the sector of components for automation and control systems for industrial processes.

Thanks to continuous technological research, Gefran products are made with deep-seated know-how which often sees them lead the field in market trends. Very close collaboration with the main manufacturers of machines and systems around the world has allowed the company to consolidate a background of applicative solutions that can meet any request from its clients.

The Gefran product range is unique for size, quality and specialisation.



## Sensors

Gefran is the leading designer and manufacturer of sensor solutions for position, pressure, temperature and force measurements. With over 50 years of know-how and experience, Gefran offers a complete range of sensor solutions specifically for mobile hydraulics. Gefran focuses specifically on applications in the following industries:

- CONSTRUCTION
- MATERIAL HANDLING
- ROAD BUILDING
- AGRICULTURAL EQUIPMENT

Gefran offers a product portfolio of sensors to equip your vehicles that provide end-users with a vehicle that is robust, reliable and safe – works every time the way you designed the vehicle to work. Gefran does this by designing in specific features in its product portfolio that the industry and customer demand. Gefran, you know we are there.



Gefran provides:

- a wide range of products that ensure robustness, reliability and safety
- industry leading technical support and training
- premier customer service
- worldwide sales network

A wide product range, diversified technologies and several history working with vehicle builders and vehicle component manufacturers make Gefran a reliable, knowledgeable and experienced partner.

Gefran provides sensor solutions that enable you to design robust, reliable and safe vehicles that can perform in any environment or work condition.



## ROTATION

## HALL EFFECT

Rotary sensors

GRA



GRN



CANopen



- Single/redundant versions
- E1 approved (ECE-R10)
- Digital output (CANopen/SAE J1939)

## INCLINATION

## MEMS

Tilt sensors

GIB



GIG



GIT



CANopen

- High precision
- Linearized response
- Single/redundant versions

All Gefran sensors are certified 

WHEEL LOADERS



DRILLING RIGS



PAVER



SCREED MACHINE

## TECHNOLOGY

## PRODUCT RANGE

## FEATURES

## LINEAR POSITION

**MAGNETOSTRICTIVE**  
Position transducers

RK5 / RK5C



CANopen

**POTENTIOMETRIC**  
Position transducers

PC67  
with cable



- High vibration resistance
- Robust and reliable
- CANopen digital output

**POTENTIOMETRIC**  
Wire position transducer

GSF



CANopen

## PRESSURE

**FILM DEPOSITED ON  
STAINLESS STEEL DIAPHRAGM**  
Pressure transducers

KS/KH/  
KHC



CANopen



- Automotive connectors
- SIL2 certification
- Digital output (CANopen/SAE J1939)

STRAIN LINK/  
FORCE

**EXTENSIMETRIC**  
Load cells

SL



CANopen

- Robust and reliable
- Single/redundant versions
- Easy to install

TH



All Gefran sensors are certified **CE**



**AERIAL PLATFORMS**



**SCISSOR LIFTS**



**TELEHANDLER**



**OVERSIZED TRANSPORT VEHICLES**

**GEFRAN**

1 Basket inclination



2 Basket load



3 Boom length position



4 Boom angle position



5 Structure load



6 Stabilizer lateral position



7 Vehicle axis inclination



8 Fifth-wheel rotation



9 Hydraulic circuit pressure



1 Boom angle position  
lower



2 Boom angle position  
intermediate



3 Boom angle position  
external



4 Bucket load



5 Third arm inclination



6 Boom angle position



7 Hydraulic circuit  
pressure



8 Stabilizer lateral  
position



9 Fifth-wheel rotation



10 Vehicle axis  
inclination



1	Bitumen conveyor worm screw height	
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3	Hydraulic circuit pressure	
4	Screed unit height asphalt thickness	
5	Screed unit tilt	
6	Bitumen pressure	
7	Right and left spray bar length detection	



1 Tank level measurement



2 Control of wings opening and closing



3 Water sprayer pressure control



4 Height adjustment of spray wings according to the height of the plants type's



5 Vehicle height adjustment according to height of plant type



6 Independent rear steering control feedback



7 Hydraulic Circuit Pressure



8 Vehicle height adjustment according to height of plant type



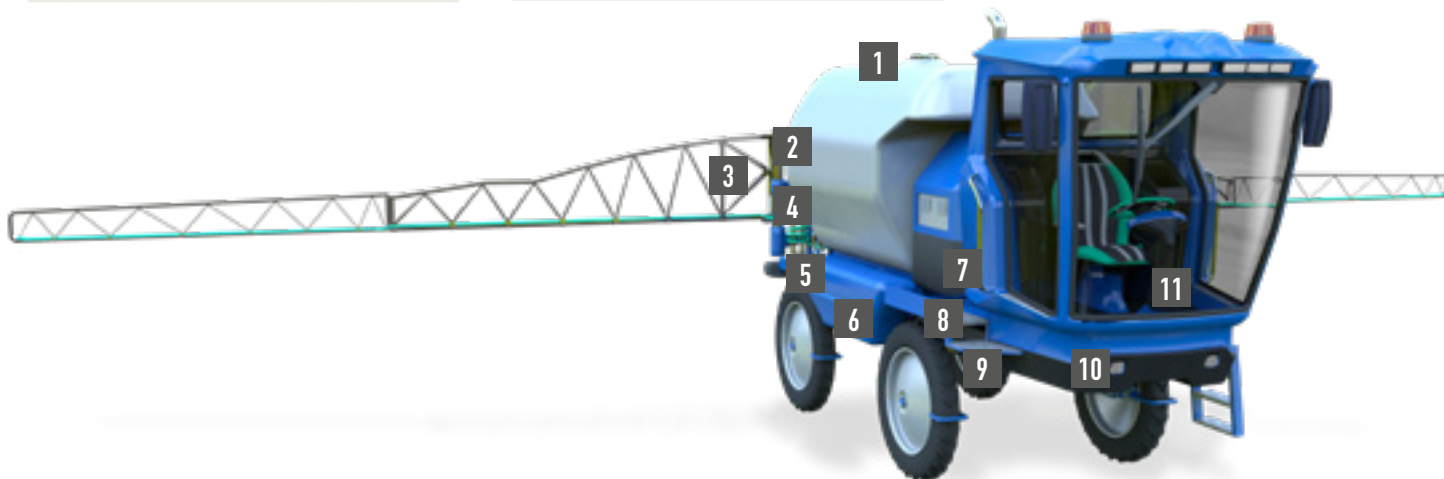
9 Independent front steering control feedback










10 Wheels Distance DX & SX for adjustment between rows



11 Operator's cabin confort and distribution wings inclination adjustment, on hilly terrain



1	Compacting size position	
2	Independent rear steering control feedback	
3	Independent front steering control feedback	
4	Operator's cabin inclination confort adjustment, on hilly terrain	
5	Detection of cutting head position in relation to the ground	
6	Hydraulic Circuit Pressure	
7	Cutting and harvesting blades height	





## LEGEND

Certifications



Approval



Communication protocol



Environmental protection



Working temperature



Shock vibrations



Redundant output



Ratiometric device



Wheatstone bridge



Ratiometric output



Analog output



Relay output





## GRA

### HALL-EFFECT SINGLE-TURN ROTARY SENSOR WITH SHAFT

Rotary sensor for measurement ranges up to 360° with ability to program analogue versions of  $\pm 15^\circ$  steps.

Contactless HALL technology for almost infinite sensor life due to absence of wear on the sensing element.

Various configurations make the product easy to install on vehicles.

High IP protection level, resistance to shock and vibration, and high electromagnetic compatibility make these products suitable for many mobile hydraulics applications.

Developed to ensure a robust and high-performance solution for applications such as agricultural machines, construction machines, material handling equipments.

## Why choose GRA

### ■ PBT CASE

- Excellent rigidity and durability
- High chemical resistance
- Significant wear resistance
- Superior solvent resistance

### ■ «LOW FRICTION» ROTATING ROD BUSHING

### ■ ELECTRONIC CIRCUIT OPERATING DIAGNOSTICS

## Applications

### ■ FRONT OR REAR STEERING ANGLE DETECTION

### ■ THRUST BEARING POSITION CONTROL

### ■ STABILISER FEET POSITION

### ■ ACCELERATOR PEDAL POSITION

### ■ TANK LEVEL DETECTION

### ■ SUSPENSION POSITION DETECTION

### ■ GRINDER MOUTH ANGLE DETECTION

### ■ CONVEYOR AUGER HEIGHT

### ■ HARVESTER HEAD POSITION

### ■ SPRAYER BOOM POSITION CONTROL

### ■ KING-PIN STEERING CONTROL

### ■ HAY BALE DIAMETER CONTROL

## Technical specifications

### ■ MEASUREMENT RANGE: $\pm 180^\circ$ (ANALOGUE OUTPUTS: INTERMEDIATE ORDER RANGE WITH $15^\circ$ STEP)

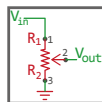
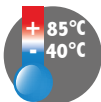
### ■ IP67 TO IPX9K ENVIRONMENTAL PROTECTION RATING WITH RELEVANT INSTALLED SOCKET CONNECTOR

### ■ WORKING TEMPERATURE $-40 \dots +85^\circ\text{C}$

### ■ ANALOGUE VOLTAGE, CURRENT AND DIGITAL ELECTRICAL OUTPUTS IN CANopen/SAE J1939 14BIT

### ■ ELECTRICAL CONNECTIONS: AMP SUPERSEAL 6P 282108-1; DEUTSCH 6P DT04-6P

### ■ SINGLE AND REDUNDANT CIRCUIT



CANopen





## GRN

### HALL-EFFECT SINGLE-TURN ROTARY SENSOR WITHOUT SHAFT

Rotary sensor for measurement ranges up to 360° with ability to program analogue versions of  $\pm 15^\circ$  steps.

Contactless Hall technology for almost infinite sensor life due to absence of wear on the sensing element.

Various configurations make the product easy to install on vehicles.

High IP protection level, resistance to shock and vibration, and high electromagnetic compatibility make these products suitable for many mobile hydraulics applications.

Developed to ensure a robust and high-performance solution for applications such as agricultural machines, construction machines, material handling equipments.

## Why choose GRN

- **PBT CASE**
  - Excellent rigidity and durability
  - High chemical resistance
  - Significant wear resistance
  - Superior solvent resistance
- **ELECTRONIC CIRCUIT OPERATING DIAGNOSTICS**
- **NO MECHANICAL CONTACT BETWEEN TRANSDUCER AND POSITION MAGNET**

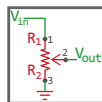
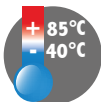
## Applications

- **FRONT OR REAR STEERING ANGLE DETECTION**
- **THRUST BEARING POSITION CONTROL**
- **STABILISER FEET POSITION**
- **ACCELERATOR PEDAL POSITION**
- **SUSPENSION POSITION DETECTION**
- **HARVESTER HEAD POSITION**

- **SPRAYER BOOM POSITION CONTROL**
- **KING-PIN STEERING CONTROL**
- **HAY BALE DIAMETER CONTROL**
- **ANGULAR POSITION OF THE PLOUGH BLADES**

## Technical specifications

- **MEASUREMENT RANGE:  $\pm 180^\circ$  (ANALOGUE OUTPUTS: INTERMEDIATE ORDER RANGE WITH  $15^\circ$  STEP)**
- **IP67 TO IPX9K ENVIRONMENTAL PROTECTION RATING WITH SOCKET CONNECTOR INSTALLED (AMP VERSION) AND IP68 (WIRED VERSION)**
- **WORKING TEMPERATURE  $-40....+85^\circ\text{C}$**
- **ANALOGUE VOLTAGE, CURRENT AND DIGITAL ELECTRICAL OUTPUTS IN CANopen/SAE J1939 14BIT**
- **ELECTRICAL CONNECTIONS: AMP SUPERSEAL 6P 282108-1; CABLE OUTPUT 18 AWG 1.65 mm OD**
- **SINGLE AND REDUNDANT CIRCUIT**



CANopen



## GIB

### SINGLE/DUAL AXIS ENTRY LEVEL TILT SENSOR (XY/360°)

ENTRY LEVEL tilt sensor with MEMS technology.

Space-saving solution, high performances, easy installation.

High IP protection level, resistance to shock and vibration, and high electromagnetic compatibility make this product suitable for many mobile hydraulics applications.

Developed to ensure a robust and high-performance solution for applications such as agricultural machines, construction machines, material handling equipments.



## Why choose GIB

- REDUCED DIMENSIONS
- PBT CASE
  - Excellent rigidity and durability
  - High chemical resistance
  - Significant wear resistance
  - Superior solvent resistance
- LINEARISED TILT ANGLE OUTPUT
- SETTABLE DIGITAL FILTERS TO REDUCE NOISE DUE TO VIBRATIONS
- THERMAL DRIFT < 0.01°/°C IN RANGE (T=-10°C..+60°C)

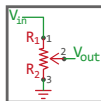
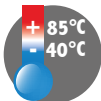
## Applications

- VEHICLE ANTI-TIPPING DETECTION
- AERIAL PLATFORMS - OPERATOR CABIN LEVELLING WITH THE GROUND
- IN COMBINATION WITH EXTERNAL GPS GROUND SELF-LEVELLING
- LOAD ANTI-TIPPING CONTROL

- VERTICAL, HORIZONTAL DRILLS: DRILL ANGLE
- BITUMEN SPRAY ROD LAYOUT COMPARED TO GROUND GRADIENT
- OPERATOR'S CABIN CONFORT ON HILLY TERRAIN
- WINGS INCLINATION ADJUSTMENT ON HILLY TERRAIN

## Technical specifications

- MEASUREMENT RANGE: FROM  $\pm 10^\circ$  TO  $\pm 85^\circ$  (XY DUAL AXLE),  $\pm 180^\circ$  (Z SINGLE AXLE)
- RESOLUTION: FROM 0.05° ( $\pm 10^\circ$ ) TO 0.1° ( $\pm 180^\circ$ ), 0.05° FOR CANopen VERSION
- IP67 TO IPX9K ENVIRONMENTAL PROTECTION RATING WITH SOCKET CONNECTOR INSTALLED (AMP VERSION) AND IPX9K WITH CABLE OUTPUT
- WORKING TEMPERATURE: -40....+85°C
- ELECTRICAL OUTPUTS: ANALOGUE VOLTAGE, CURRENT AND DIGITAL IN CANopen
- ELECTRICAL CONNECTIONS: AMP SUPERSEAL 6P 282108-1; CABLE OUTPUT 18 AWG 1.65 mm OD



CANopen





## GIG

### GENERAL SINGLE/DUAL AXIS INCLINOMETER (XY/360°)

GENERAL Inclinometer MEMS technology.

High performance, high IP rating, resistance to shock and vibrations, and high electromagnetic compatibility make this sensor suitable for mobile hydraulic applications.

Developed to guarantee a robust, high-performance solution for applications such as agricultural vehicles, earth-moving machines, and hoisting equipment.



## Why choose GIG

### ■ PBT CASE

- Excellent rigidity and durability
- High chemical resistance
- Significant wear resistance
- Superior solvent resistance

### ■ LINEARISED TILT ANGLE OUTPUT

### ■ SETTABLE DIGITAL FILTERS TO REDUCE NOISE DUE TO VIBRATIONS

### ■ THERMAL DRIFT < 0.01°/°C IN RANGE (T=-10°C..+60°C)

## Applications

### ■ VEHICLE ANTI-TIPPING DETECTION

### ■ AERIAL PLATFORMS - OPERATOR CABIN LEVELLING WITH THE GROUND

### ■ IN COMBINATION WITH EXTERNAL GPS GROUND SELF-LEVELLING

### ■ LOAD ANTI-TIPPING CONTROL

### ■ BITUMEN SPRAY ROD LAYOUT COMPARED TO GROUND GRADIENT

### ■ OPERATOR'S CABIN CONFORT ON HILLY TERRAIN

### ■ WINGS INCLINATION ADJUSTMENT ON HILLY TERRAIN

## Technical specifications

### ■ MEASUREMENT RANGE: FROM $\pm 10^\circ$ TO $\pm 85^\circ$ (XY DUAL AXLE), $\pm 180^\circ$ (Z SINGLE AXLE)

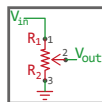
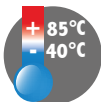
### ■ RESOLUTION: FROM 0.05° ( $\pm 10^\circ$ ) TO 0.1° ( $\pm 180^\circ$ ); 0.05° FOR CANopen VERSION

### ■ ENVIRONMENTAL PROTECTION RATING: IP67 VERSION WITH M12 AND IPX9K CABLE VERSION

### ■ WORKING TEMPERATURE: -40....+85°C

### ■ ELECTRICAL OUTPUTS: ANALOGUE VOLTAGE, CURRENT AND DIGITAL IN CANopen

### ■ SINGLE AND REDUNDANT CIRCUIT





## GIG - RELAY

### DUAL AXIS GENERAL TILT SENSOR RELAY OUTPUT (XY)

GENERAL Inclinometer MEMS technology RELAY VERSION

High performance, high IP rating, resistance to shock and vibrations, and high electromagnetic compatibility make this sensor suitable for mobile hydraulics applications.

Ideal for all mobile hydraulic applications (agricultural machines, earth moving machines, material handling applications) that need a sensor with safety function.

## Why choose GIG – RELAY

### ■ PBT CASE

- Excellent rigidity and durability
- High chemical resistance
- Significant wear resistance
- Superior solvent resistance

### ■ LINEARISED TILT ANGLE OUTPUT

### ■ SETTABLE DIGITAL FILTERS TO REDUCE NOISE DUE TO VIBRATIONS

### ■ THERMAL DRIFT < 0.005°/°C IN RANGE (T=-10°C...+60°C) OR <0.008°/°C

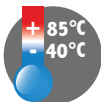
- LOAD ANTI-TIPPING CONTROL
- OUTREACH TILT ANGLE DETECTION

## Technical specifications

- MEASUREMENT RANGE: FROM  $\pm 10^\circ$  TO  $\pm 60^\circ$  (XY DUAL AXLE)
- RESOLUTION: FROM  $0.01^\circ$  ( $\pm 10^\circ$ ) TO  $0.04^\circ$  ( $\pm 60^\circ$ )
- ENVIRONMENTAL PROTECTION RATING: IP67 VERSION WITH M12 AND IPX9K CABLE VERSION
- WORKING TEMPERATURE: -40....+85°C
- OUTPUT SIGNAL: RELAY (SETTABLE - FOR XY DUAL AXLE ONLY)

## Applications

- VEHICLE ANTI-TIPPING DETECTION
- AERIAL PLATFORMS - OPERATOR BASKET TILT SAFETY CONTROL
- HOOK POSITION CONTROL TELEHANDLER





## 6IT

### TOP SINGLE/DUAL AXIS INCLINOMETER (XY/360°)

TOP Inclinometer MEMS technology.

Top performance, high IP rating, resistance to shock and vibrations, and high electromagnetic compatibility make this sensor suitable for mobile hydraulics applications.

Developed to guarantee a robust, high-performance solution for applications such as agricultural vehicles, earth-moving machines, and hoisting equipment.



## Why choose GIT

- **PBT CASE**
  - Excellent rigidity and durability
  - High chemical resistance
  - Significant wear resistance
  - Superior solvent resistance
- **LINEARISED TILT ANGLE OUTPUT**
- **SETTABLE DIGITAL FILTERS TO REDUCE NOISE DUE TO VIBRATIONS**
- **THERMAL DRIFT < 0.005°/°C IN RANGE (T=-10°C.. +60°C) OTHERWISE < 0.008°/°C**

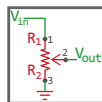
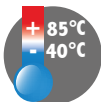
## Applications

- **VEHICLE ANTI-TIPPING DETECTION**
- **AERIAL PLATFORMS - OPERATOR CABIN LEVELLING WITH THE GROUND**
- **IN COMBINATION WITH EXTERNAL GPS GROUND SELF-LEVELLING**

- **LOAD ANTI-TIPPING CONTROL**
- **OUTREACH TILT ANGLE DETECTION**
- **OPERATOR'S CABIN CONFORT ON HILLY TERRAIN**
- **WINGS INCLINATION ADJUSTMENT ON HILLY TERRAIN**

## Technical specifications

- **MEASUREMENT RANGE: FROM  $\pm 10^\circ$  TO  $\pm 85^\circ$  (XY DUAL AXLE),  $\pm 180^\circ$  (Z SINGLE AXLE)**
- **RESOLUTION: FROM  $0.01^\circ$  ( $\pm 10^\circ$ ) TO  $0.1^\circ$  ( $\pm 180^\circ$ );  $0.01^\circ$  FOR CANopen VERSION**
- **ENVIRONMENTAL PROTECTION RATING: IP67 VERSION WITH M12 AND IPX9K CABLE VERSION**
- **WORKING TEMPERATURE:  $-40 \dots +85^\circ\text{C}$**
- **ELECTRICAL OUTPUTS: ANALOGUE VOLTAGE, CURRENT AND DIGITAL IN CANopen**
- **SINGLE AND REDUNDANT CIRCUIT**



CANopen





## GSF

### WIRE POSITION TRANSDUCER (WIRE POTENTIOMETER)

Linear transducer with wire potentiometer technology. Excellent repeatability, high IP rating, resistance to shock and vibrations, and high electromagnetic compatibility make this transducer suitable for mobile hydraulic applications.

Developed to ensure a sturdy and reliable version for applications such as farming equipment, earth movement machines and lifting machines



## Why choose GSF

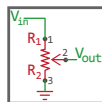
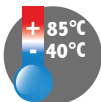
- **PBT CASE**
  - Excellent rigidity and durability
  - High chemical resistance
  - Significant wear resistance
  - Superior solvent resistance
- **316L STAINLESS STEEL AND HIGH RESISTANCE NYLON WIRE**
- **«LOW FRICTION» WIRE SLIDING BUSHING**
- **OUTPUT LINEARISED UP TO 17 POINTS ( $\pm 0.25\%$  FS FOR STROKES UP TO 4300 mm, OTHERWISE  $\pm 0.5\%$  FS)**

## Applications

- **CRANE ARM, AERIAL PLATFORM, TELEHANDLER BOOM EXTENSION DETECTION**
- **VEHICLE STABILISER EXTENSION POSITION FEEDBACK**
- **CRAWLER STEERING CONTROL**
- **BITUMEN DEPOSIT ROD OPENING CLOSING**
- **EXTENSION POSITION CONTROL VERTICAL SPRAYER**

## Technical specifications

- **MEASUREMENT RANGE: FROM 1800 TO 8300 mm (ANALOGUE OUTPUTS: SET ZERO/SPAN FOR INTERMEDIATE STROKES)**
- **IP67 ENVIRONMENTAL PROTECTION RATING WITH INSTALLED SOCKET CONNECTOR**
- **WORKING TEMPERATURE -40....+85°C**
- **ELECTRICAL OUTPUTS: ANALOGUE VOLTAGE, CURRENT AND DIGITAL IN CANopen**
- **SINGLE AND REDUNDANT CIRCUIT**



CANopen

## RK-5

### CONTACTLESS MAGNETOSTRICTIVE LINEAR POSITION TRANSDUCER WITH FLANGED CONNECTION

Gefran's patented ONDA contactless technology achieves a compact, modular structure for simple installation.

RK-5 is a magnetostrictive position transducer with flanged connection that installs completely inside oil-pressure cylinders.

Its unique design, plus a wide range of cursor configurations, ensures easy installation and total compatibility with cylinder manufacturer specifications.





## Why choose RK-5

- NO WEAR COMPONENTS, PRACTICALLY UNLIMITED WORKING LIFE
- 316L STAINLESS STEEL CASE, PERFECT AGAINST
  - Battery acids,
  - Combustion fuels,
  - Salt and saline mist,
  - Resistant to stones, rocks and similar
  - Reduced temperature range variation

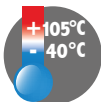
## Applications

- OIL HYDRAULIC CYLINDER PISTON POSITION CONTROL
- CRANE ARM, AERIAL PLATFORM, TELEHANDLER BOOM EXTENSION DETECTION
- VEHICLE TRIM STABILISER EXTENSION
- SUSPENSION POSITION FEEDBACK
- SINGLE AXLE AND MULTI-AXLE STEERING CONTROL
- VARIABLE STEERING AXLE WIDTH DETECTION

- ASPHALT REMOVAL MACHINE MILL DEPTH
- ASPHALT DEPOSIT MACHINE SCREED HEIGHT
- VIBRATION AMPLIFICATION SYSTEM POSITION ON VIBRATING ROLLER MACHINE FEEDBACK
- VIBRATING ROLLER: ASPHALT COMPRESSION KINEMATICS AMPLIFICATION SYSTEM CONTROL

## Technical specifications

- MEASUREMENT RANGE: FROM 50 TO 2500 mm
- IP67 - IPX9K ENVIRONMENTAL PROTECTION RATING WITH INSTALLED SOCKET CONNECTOR
- PRESSURE RESISTANCE UP TO 350 BAR (400 PEAK BAR)
- WORKING TEMPERATURE -40....+105°C
- ANALOGUE VOLTAGE, CURRENT AND DIGITAL ELECTRIC OUTPUTS IN CANopen



CANopen®



## PMI-SL

### RECTILINEAR DISPLACEMENT TRANSDUCER WITH MAGNETIC DRAG

The PMI-SL transducer was designed for all those internal cylinder applications where transducer size must be limited: for this reason, the diameter was enlarged to 12.7 mm.

Various sturdiness features: stainless steel, IP67 protection rating and pressure resistance up to 250 bar (400 peak bar).

Available with flanged or threaded heads, to guarantee mechanical compatibility with all main cylinder types

This patented solution is ideal for application in hydraulic cylinders where simplicity features are required while guaranteeing maximum measurement replication.

## Why choose PMI-SL

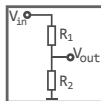
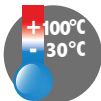
- COMPACT DIMENSIONS
- MAXIMUM SOLIDITY
- HIGHER RESISTANCE TO CHEMICAL AGENTS
  - High rigidity
  - Significant wear resistance

## Applications

- OIL HYDRAULIC CYLINDER PISTON POSITION DETECTION
- STABILISER EXTENSION CONTROL
- EXCAVATION TOOL POSITION CONTROL
- GATE, DISTRIBUTION GATE OPENING AND CLOSING DETECTION
- LINEAR MOVEMENT CONTROL IN POTENTIALLY EXPLOSIVE AREAS
- DETECTION OF PLOUGH ROTATION AT THE END OF AGRICULTURAL FIELD

## Technical specifications

- MEASUREMENT RANGE: FROM 50 TO 1000 mm
- IP 67 ENVIRONMENTAL PROTECTION RATING
- ABSOLUTE LINEAR TRANSDUCER WITH INFINITE RESOLUTION
- PRESSURE RESISTANCE UP TO 250 BAR (400 PEAK BAR)
- WORKING TEMPERATURE -30....+100°C
- POTENTIOMETRIC AND CURRENT OUTPUT 4...20mA (PMI-SLE VERSION)





## PC67 with cable

### RECTILINEAR DISPLACEMENT TRANSDUCER WITH IP67 PROTECTION DEGREE

The PC67 displacement transducer was developed to guarantee a high protection level (IP67) in applications under harsh conditions and outdoors, where it may be necessary to work in the presence of dust, dirt, or liquids (not in prolonged immersion).

The robust structure of the PC series has been improved thanks to a sealing system (patent pending) that makes it extremely reliable.

Ideal for mobile hydraulic applications, on agricultural machines, earth-moving equipment and utility vehicles.



## Why choose PC67 with cable

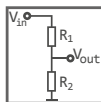
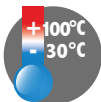
- COMPACT DIMENSIONS
- ANODISED ALUMINIUM CASE:
  - Excellent durability
  - High wear resistance

## Applications

- STEERING ANGLE DETECTION
- STABILISER EXTENSION CONTROL
- OIL HYDRAULIC CYLINDER PISTON POSITION DETECTION
- LINEAR MOVEMENT CONTROL IN POTENTIALLY EXPLOSIVE AREAS: DEMINING SYSTEMS

## Technical specifications

- MEASUREMENT RANGE: FROM 50 TO 750 mm
- ABSOLUTE LINEAR TRANSDUCER WITH INFINITE RESOLUTION
- ELECTRICAL CONNECTION: CABLE OUTPUT WITH DEUTSCH 3P CONNECTOR
- WORKING TEMPERATURE -30....+100°C
- IP 67 ENVIRONMENTAL PROTECTION RATING





## KS/KH/KHC

### PRESSURE TRANSMITTER

KS transmitters are based on film sensing element deposited on stainless steel diaphragm.

Thanks to the latest state of the art SMD electronics and compact all stainless steel construction, these products are extremely robust and reliable, with SIL2 certification supplied as standard.

KS transmitters are suitable for all industrial applications, specially on hydraulics on mobile vehicles normally subject to high levels of shock, vibrations, pressure and temperature peaks



## Why choose KS/KH/KHC

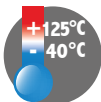
- COMPACT DIMENSIONS
- 304 STAINLESS STEEL CASE, PERFECT AGAINST
  - Battery acids,
  - Combustion fuels,
  - Salt and saline mist,
  - Resistant to stones, rocks and similar

## Applications

- OIL HYDRAULIC CIRCUIT PRESSURE CONTROL
- HYDRAULIC CYLINDER PRESSURE CONTROL
- IRRIGATION PUMP WATER PRESSURE CONTROL
- DUST REDUCER WATER PRESSURE CONTROL IN CONSTRUCTION SITES
- T.B.M. GREASE PUMP PRESSURE CONTROL
- SPRAYER WATER PRESSURE CONTROL

## Technical specifications

- MEASUREMENT RANGE: FROM 4 TO 1000 mm
- WORKING TEMPERATURE -40....+125°C
- ANALOGUE VOLTAGE, CURRENT AND DIGITAL ELECTRICAL OUTPUTS IN CANopen AND J1939
- ELECTRICAL CONNECTIONS: EN 175301-803 TYPE A, M12X1 (4-PIN), DEUTSCH DT04-4P (4-PIN), AMP SUPERSEAL 1.5 (3-PIN), METRI-PACK 150 (3-PIN), SHIELDED WIRE



CANopen





## SL76/80-VDA268

### STRAIN LINK SENSOR WITH VARIABLE DIGITAL AMPLIFIER 268

The strain occurring between the mounting areas is mechanically amplified inside of the sensor.

The integrated digital amplifier processes the signal on the spot, avoiding EMC problems.

Thanks to the rugged design, these sensors are used in heavy industrial environment. In case of overload, this sensor may get an offset.

After replacing a SL-Sensor, they need to be recalibrated.

They need a cyclical reset (for cycles >1min.).

The amplifier is able to manage a wide offset interval.



## Why choose SL76/80-VDA268

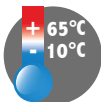
- COMPACT DIMENSIONS
- ROBUST DESIGN
- BUILT-IN ELECTRONICS
- EASIER INSTALLATION THAN TRADITIONAL STRAIN-GAUGE POSITIONING

## Applications

- ANTI-TIPPING PROTECTION
- DIRECT SURFACE DEFORMATION MEASUREMENT
- INDIRECT LOAD CONTROL

## Technical specifications

- MEASUREMENT RANGE: FROM 100...800 $\mu\epsilon$
- WORKING TEMPERATURE -10....+65°C
- ANALOGUE VOLTAGE, CURRENT AND DIGITAL ELECTRICAL OUTPUTS IN CANopen, RS485/RS422
- ELECTRICAL CONNECTIONS: M16X1 (7-PIN), 5-POLE SHIELDED WIRE (1 M OR HIGHER)



CANopen®



## TH

### FORCE TRANSDUCER FOR TENSION/COMPRESSION APPLICATIONS

The TH series force transducers are ideal for systems that measure tension or compression force in industrial applications, where accuracy and reliability are important, even in harsh environments.

The disposition of the (8) strain gauges of the measurement bridges uses the deformation produced by the shear force of the applied load. It is thus possible to make accurate force transducers that are rugged and insensitive to lateral loads.

The transducer is machined from a solid block of stainless steel and contains no welds or joints.

The electrical circuit is protected by sealed formed stainless steel plates.

## Why choose TH

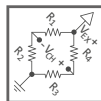
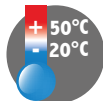
- VERSION WITH REDUNDANT OUTPUT ALSO AVAILABLE
- INSENSITIVE TO LATERAL LOADS
- PRECISION CLASS: 0.2%

## Applications

- TRACTION/COMPRESSION APPLICATIONS
- LOAD AND OVERLOAD MEASUREMENT
- CABLE TENSION TEST

## Technical specifications

- MEASUREMENT RANGE: FROM 10 TO 100 kN
- 100% STAINLESS STEEL
- WORKING TEMPERATURE -20....+60°C
- RUST RESISTANT
- INTERNALLY GENERATED CALIBRATION SIGNAL
- PROTECTION RATING: IP65 (DIN 40050 STANDARD)



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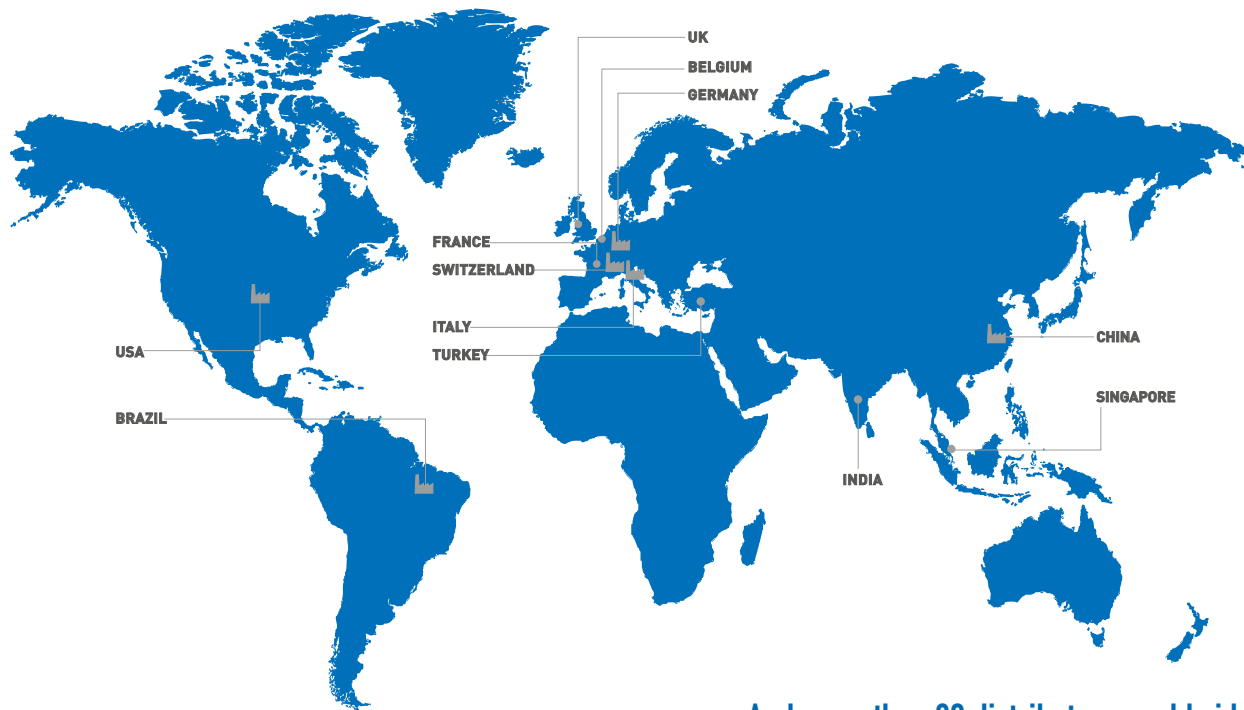
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