# INSTROTECH
# PRODUCT
# LISTING

# 2020



**instrotech**
INSTRUMENTATION AND PROCESS CONTROL
A Comtest Group Company

CALOG INSTRUMENTS

inspecta FFT
TUBE LEAK DETECTION SYSTEM

optris
infrared thermometers

KELLER

Senix CORP

VISHAY
PRECISION
GROUP

KOBOLD

ELIS

SIKO

LTR

MICHELL Instruments

MONITRAN

selet

SCANCON
Industrial Encoders

MCB INDUSTRIE

Rototherm
Canongate Technology

TMS

# About us

**Instrotech's Contact Details**

**Instrotech Johannesburg Office (Head Office)**
Physical Address: 8 Enterprise Close, Linbro Park, 2090, South Africa
Postal Address: P.O. Box 1208, Linbro Park, 2066
Tel: +27 (0)10 595 1834
Fax: +27 (0)11 462 1958
Email: sales@instrotech.co.za
Website: www.instrotech.co.za

Sales Account Manager East Rand, South Rand and Vaal Triangle
Sharon Jordaan
Mobile: +27 (0) 79 886 4305
Email: sharon.jordaan@instrotech.co.za

Sales Account Manager Johannesburg Central, Pretoria, Mpumalanga and Limpopo
Tinus Ludik
Mobile: +27 (0) 79 884 4511
Email: tinus.ludik@instrotech.co.za

**Instrotech KwaZulu Natal Office**
Physical Address: Unit B1b Netcare Office Park, 95 Umhlanga Rocks Drive, Durban North, 4051, South Africa

Sales Account Manager Kwa-Zulu Natal, Eastern Cape, Lesotho and Swaziland
Asif Ismail
Mobile: +27 (0) 84 551 5786
Email: asif.ismail@instrotech.co.za

## The benefits of partnering with Instrotech (Pty) Ltd:

**Experience:**
Instrotech (Pty) Ltd (Instrotech) was formed in 1981 to create and supply high quality process control instrumentation and industrial electronics to address local and international market requirements. As part of our commitment to support and offer our customers a total solution, we:
- represent a number of leading international process control instrumentation manufacturers in Africa, supported by an experienced sales and support team.
- locally design and develop technology comprising of panel meters, displays and transmitters as well as specialised products, including the INSPECTA FFT acoustic steam leak detection system for detecting tube leaks in coal fired utilities, oxygen plants and gasifiers and the Calog Calibrator range for troubleshooting and calibration in the process industry. These systems and products are sold all over the world.

With over thirty years of experience and an unrelenting focus on technology, performance, quality and good value, Instrotech has established itself as a trustworthy technology partner.

**Quality:**
Instrotech's range of high quality products are backed by a well trained, professional sales and technical support team who are focused on offering a comprehensive and friendly service to ensure our customer's needs are met and to guarantee them peace of mind throughout the purchasing process. All Instrotech's manufacturing and processing systems comply with ISO9001 standards.

**Variety:**
Instrotech offers a wide range of quality process control and automation instruments, not limited to any one particular technology. This gives the team at Instrotech the freedom to collaborate with their customers to meet their specific industry requirements and deliver solutions that are easy and quick to implement and deliver on the required results.

# Index

## Suppliers

## Products

# instrotech
## INSTRUMENTATION AND PROCESS CONTROL
### A Comtest Group Company

**WWW.INSTROTECH.CO.ZA**

# CALOG by instrotech

Calog Instruments was formed to specialise in the design and manufacture of high quality process control instrumentation. A leading producer with worldwide sales, the company manufactures and distributes the following range of process control instrumentation and specialized systems to the South African and international markets.

## PANEL MOUNT INDICATORS

48mm x 96mm digital indicators, that are 4, 5, 6 or 8 digit displays, that display process parameters such as general process signals, temperature, frequency, totalising, time, and load cell applications. Customizable to suit most process applications.

| MODEL | DESCRIPTION |
|---|---|
| 4001 | 4-digit process/counter/frequency indicator |
| 5001 | $5^1/_2$-digit process/counter/frequency indicator |
| 4015 | 4-digit dual input process indicator |
| 5015 | $5^1/_2$-digit dual input process indicator |
| 5016 | Two by 3 digit process input indicator |
| 5600 | 6-digit process indicator |
| 8001 | 8-digit process/counter/frequency indicator |
| 4006 | 4-digit high voltage/high current indicator |
| 5001-T | $5^1/_2$-digit process/count/freq with PROCESS TOTALISER/INTEGRATOR (4 - 20mA) |
| 8001-T | 8-digit process TOTALISER/INTEGRATOR (Rate display $5^1/_2$-digit) (4 - 20mA) |
| 4003 | 4-digit universal temperature indicator, thermocouple/RTD Optional for Ni 100, Pt500 & Pt1000 |
| 4004 | 4-digit load cell indicator/controller (Includes option 3010 and 3014) |
| 5004 | $5^1/_2$-digit load cell indicator/controller (Includes option 3010 and 3014) |
| 5012 | $5^1/_2$-digit counter/frequency/rate/event timer/totaliser indicator |
| 5012-C | $5^1/_2$-digit counter/frequency/rate/event timer/totaliser CLOCK indicator |
| 5012-Q | $5^1/_2$-digit counter/frequency/rate/event timer/totaliser QUADRATURE indicator |
| 5002 | $5^1/_2$-digit gray code/binary or 6 digit BCD indicator |
| 4011 | 4-digit ASCII Bus protocol serial bus indicator |
| 5011 | $5^1/_2$-digit ASCII Bus protocol serial bus indicator |

| OPTIONS | |
|---|---|
| 3000 | Lineariser /squareroot/log/S-curve/16 point |
| 3001P/M | Dual setpoints/alarms (Photomos / electromechanical) |
| 3002 | RS-485 output |
| 3003 | 0/4-20 mA/0-10 Vdc retransmission -(Analogue output) |
| 3004P/M | 1 setpoint/alarm (Photomos / electromechanical) |
| 3006 | Fully isolated V or I output (add to 3003, 3002, 3013) |
| 3008 | Galvanic isolated dc power supply (10 to 30 Vdc) |
| 3009 | Parallel BCD output (Cannot be used with 3017/3018) |
| 3010 | Switch mode power supply (95 to 265 Vac/dc) |
| 3011 | Ohms tap input |
| 3012 | Peak hold (0.5 Seconds) |
| 3013 | RS-232 output |
| 3014 | Auto zero/tare |
| 3017P/M | 3 setpoints/alarms (Photomos / electromechanical) |
| 3018P/M | 4 setpoints/alarms (Photomos / electromechanical) |
| 3019 | Green display |
| 3020 | AlGaAs ultra bright display |
| 3021 | Mains frequency (50.00 Hz)4001 add |
| 3022 | Bar graph display (Vertical) |
| 3023 | Pulse output for remote totalizer |
| 3024 | Auto manual station (include 3003) |
| 3025 | Key pad lock |
| 3026 | Display hold |
| 3028 | Non-isolated dc power supply (10-30 V) not 4/5004 |
| 3029 | Time and date stamp |
| 3030 | Low voltage ac frequency input |

# Panel meters

# INDICATOR ENCLOSURES

| MODEL | DESCRIPTION |
|---|---|
| ACC04 | Table top for one Calog DPM |
| ACC05 | Table top for two Calog DPMs |
| ACC06 | IP65 wall mount enclosure for one Calog DPM + pcb |
| ACC07 | Table top for one Calog DPM + nicads + charger |

ACC06

# LOOP POWERED INDICATORS

| MODEL | DESCRIPTION |
|---|---|
| 3505 | 3 1/2 digit LCD panel mount |
| 3506 | 3 1/2 digit LCD field mount |
| CALOGLCD | 5 1/2 digit LCD, 4-20mA loop powered display (short depth) |
| CALOG-LPI610 | 6 digit backlit LCD, 4-20mA loop powered display, field mount |

DPM3506

# PROGRAMMABLE DIN RAIL PROCESS TRANSMITTERS

| MODEL | DESCRIPTION |
|---|---|
| 9000 | Programmable process transmitter, isolated supply/input/output |
| | Switch mode supply: 95-265 Vac/dc, inputs: mV, V, mA, J, K, N, S, R, T, W5, |
| | PT100, frequency, output: 4 -20 mA or 0-10 Vdc, RS-232 communication |
| | standard |
| 9240 | As above with 24 Vdc supply(Isolated) |
| 9004 | Load cell transmitter, isolated supply/input/output |
| | Switch mode supply: 95-265 Vac/dc, input: maximum of 4 load cells |
| | Output: 4-20 mA or 0-10 Vdc, RS-232 communication standard |
| 9244 | As above with 24Vdc supply (isolated) |
| 9006 | High current/voltage transmitter, isolated supply/input/output |
| | Switch mode supply: 95-265 Vac/dc, Input: maximum 5A ac or 400 Vac |
| | Output: 4-20 mA or 0-10 Vdc, RS-232 communication standard |

# OPTIONS FOR ABOVE PROGRAMMABLE DIN RAIL PROCESS TRANSMITTERS

| OPTIONS | |
|---|---|
| -3001PD | Dual alarm option (Photomos SPNO) |
| -3002PD | RS-485 communication (Replaces RS-232) |
| -3004PD | Single alarm option (Photomos SPNO) |

*All units set via RS-232 port. Software and cable supplied at no extra charge on request.

# TEMPERATURE SELECTOR SWITCHES

| MODEL | DESCRIPTION |
|---|---|
| SW-4 | Temperature switch 4-way 3-pole PT100/TC |
| SW-6 | Temperature switch 6-way 2-pole PT100/TC |
| SW-12 | Temperature switch 12-way 1-pole TC only |

**Indicators | Transmitters | Switches**

# Indicators | Transmitters | Switches

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## CALOG by instrotech

## FIELD MOUNT LOAD CELL TRANSMITTERS

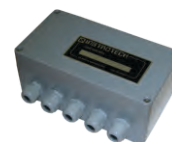| MODEL | DESCRIPTION |
|---|---|
| 6004LC | Load cell transmitter with 6 digit LED display and 4-line LCD, analogue output. |
| 6004BW | Beltweigher transmitter with 6 digit LED display and 4-line LCD, analogue output, USB, SD card and six relays supplied as standard. |
| 6004MF | Multi-function weighing controller, 6 digit LED display and 4-line LCD analogue output, USB, SD card and six relays supplied as standard. |
| Options | |
| 3001MF | Dual relay |
| 3002MF | RS-485 communication |
| 3013MF | RS-232 communication |
| 3018MF | Four relay |
| 3030MF | Six relay |

### 6004MF APPLICATIONS

Load cell Transmitter,
Batch Controller,
Bagfiller,
Loss-in-Weight Controller,
Dyno-Meter,
Through-Put Weigher.

## LOAD CELL JUNCTION BOXES

| MODEL | DESCRIPTION |
|---|---|
| JB3 | Junction box for 3 load cells |
| JB4 | Junction box for 4 load cells |

## REMOTE AND EXTRA LARGE DISPLAYS

| MODEL | DESCRIPTION |
|---|---|
| Remote 7 segment display, polycarbonate housing : 225 x 162 x 65mm | |
| 7454 | 4 digit ASCII bus/DIG Bus, 45mm display |
| 7544 | 5 digit ASCII bus/DIG Bus, 57mm display |
| 7624 | 6 digit ASCII bus/DIG Bus, 20mm display |
| 7824 | 8 digit ASCII bus/DIG Bus, 20mm display |
| IP65 metal housing : 500 x 200 x 120mm | |
| 1302 l 4 | 3 digit 125mm LED ASCII bus/DIG Bus |
| 1402 l 4 | 4 digit 125mm LED ASCII bus/DIG Bus |
| IP65 metal housing : 600 x 300 x 120mm | |
| 2302 l 4 | 3 digit 125mm LED ASCII bus/DIG Bus |
| 2402 l 4 | 4 digit 125mm LED ASCII bus/DIG Bus |
| 2502 l 4 | 5 digit 125mm LED ASCII bus/DIG Bus |
| IP65 metal housing : 800 x 300 x 120mm | |
| 2604 | 6 digit 125mm LED ASCII bus/DIG Bus |
| 2602-RTC | 6 digit 125mm LED real time clock |

7454

1404

## RADIO TRANSMITTERS / RECEIVERS

| MODEL | DESCRIPTION |
|---|---|
| RAD100 | Wireless data transmission from panel mount indicator to large display |
| | RS-232 and RS-485 avaliable, 8-30 Vdc supply, license free |
| | Operation in 2.4 GHz band |

## TWO WIRE PROCESS TRANSMITTERS

| MODEL | DESCRIPTION |
|---|---|
| 9300 | Dual setput transmitter unit (Change over contacts) |
| 9500 | Two-wire transmitter, inputs - potentiometer/Volts/mA |
| 9600-1 | Single input loop isolator 0-32 mA/0-32 mA |
| 9600-2 | Dual input loop isolator 0-32 mA/0-32 mA |

# Large displays and transmitters

3

# inspecta
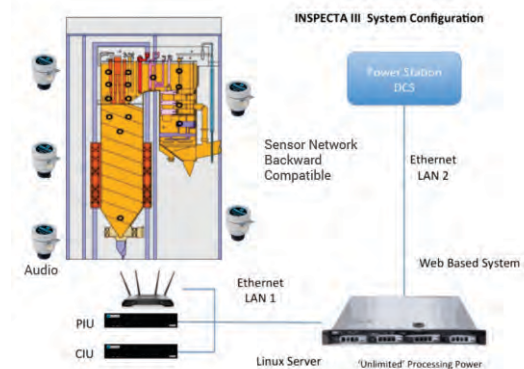### ACOUSTIC STEAM LEAK DETECTION

## INSPECTA III

## NEW

The long awaited INSPECTA III is nearing its completion.
Currently under field trials at selected power stations, the INSPECTA III is proving to be a vast improvement on our previous generations of Acoustic Steam Leak Detection.

With its stable LINUX operating system and infinite computing ability, the INSPECTA III is sure to be the next big thing when it comes to Safety and Maintenance on coal fired boilers.

These features include:
- Backward compatibility with existing microphone sensors infrastructures
- Ethernet connectivity
- Secure remote accessibility via the Server
- Digital, Analogue and Modbus output options
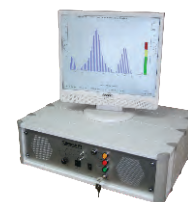- Advance self-diagnostics....
  and many more!



## STEAM LEAK DETECTION SYSTEMS FOR POWER STATION BOILERS

The conventional method of detecting tube leaks such as monitoring make-up water, mass balancing or depending on the human ear to recognise a sound change, are not sufficiently sensitive or reliable on large boilers. By using these methods the leak is often large enough to have already caused serious consequential damage - sometimes to an entire boiler face - before anyone is aware of it.

Research on Acoustic Steam Leak Detection for power station boilers started during the 1970's and has since become the most advanced method of steam leak detection world-wide.

| MODEL | DESCRIPTION |
|-------|-------------|
| FFT-16 | Inspecta FFT16-point system |
| FFT-32 | Inspecta FFT32-point system |
| FFT-HA-3 | Inspecta sensor and head amplifier with housing |
| FFT-MC | Inspecta sensor capsule assemble |
| FFT-PVC | Inspecta pipework Sets, PVC and purge valve |

In 1984 we designed and developed, at the request of and, in consultation with the South African Power Utility, where 93% of all electricity is currently generated using coal, an advanced acoustic leak detection system called Inspecta FFT, to detect boiler tube leaks in coal fired utilities as well as in oxygen plants and gasifiers.

Power Stations worldwide are now using this equipment for the early detection of tube leaks to reduce down time and prevent consequential damage. According to the World Coal Association, the importance of coal to electricity generation worldwide is set to continue, with coal fueling 44% of global electricity in 2030. (Source IEA 2010).

The Inspecta installed base includes power stations in South Africa, Germany, Australia, Turkey, India, Malaysia and China. Authorised distributors in these countries are on hand to provide all the services required to provide high levels of pre and post sales support as well as any spare parts required to keep the systems running efficiently at all times.

Instrotech also distributes and manufactures a range of process control instrumentation and specialized systems to the South African and international markets.

## Acoustic steam leak detection

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**CALOG**
INSTRUMENTS ®

Calog Instruments was formed to specialise in the design and manufacture of high quality process control instrumentation. Calog Instruments saw a need in the process industry for high quality, portable field calibration units, thus the Calog Calibrators were born.

## mA LOOP CALIBRATOR

The **CALOG - LOOP II** is a powerful field instrument with the added feature of datalogging. It's speciality is milliamp loop powered instruments which it can measure, source and simulate. Sourcing can be increment, step, ramp or valve stroking. DC voltage and circuit continuity can also be measured.

| MODEL | DESCRIPTION |
|---|---|
| **CALOG-LOOP II** | Measure, source or simulate mA, including Tx Exc |
| | Measure volts and continuity, **datalogging** via SD card and USB port |
| | Comes standard with li-ion batteries, trend display |

mA   V   ●●

## TEMPERATURE CALIBRATOR

The **CALOG-TEMP** simultaneously measures and sources ten types of thermocouples and seven resistance temperature detectors (RTD). It measures milliamps whilst sourcing or simulating millivolts, TCs, RTDs or ohms to calibrate transmitters.

The trend feature is ideal for graphing temperature profiles and PID controller optimization with a programmable timebase. In addition, the **CALOG-TEMP** has the functionality necessary to install and maintain all powered and non-powered transducers using the built-in 24V loop power supply. The **CALOG-TEMP i**s the economical choice for people wanting to do industrial field or workshop calibration**.**

| MODEL | DESCRIPTION |
|---|---|
| **CALOG-TEMP** | Measure or source RTD / TC / mV / ohms / mA |
| | Simultaneous mA measure and sourcing of RTD, TC, mV or ohms |
| | **Datalogging** via SD card and USB port, includes Tx Exc |
| | Comes standard with li-ion batteries, trend display |

RTD   TC   mV   Ω   mA   ●●

## PRESSURE CALIBRATOR

The **CALOG - PRESSURE II**'s speciality is pressure measurement and milliamp loop powered instruments which it can measure, source and simulate. DC voltage and circuit continuity can also be measured. Interchangeable pressure sensors enable users to effortlessly connect a wide range of pressure sensors. Simultaneous measurement of pressure and current for I/P testing. Pressure switch test feature ensures accurate and safe calibration of pressure switches.

| MODEL | DESCRIPTION |
|---|---|
| **CALOG-PRESS II** | Pressure calibrator that **includes one pressure Tx** |
| | Measure, source or simulate mA, Including Tx Exc |
| | Measure volts and continuity. Trend display, measure pressure using |
| | digital transmitter, datalogging via sd card and usb port, comes |
| | standard with li-ion batteries |
| | **Additional sensors (Keller series PA-33X)** |
| | Sensor ranges:  **-**1 to 1 bar, 0 to 1 bar, 0 to 3 bar, 0 to 10 bar, |
| | 0 to 30 bar, 0 to 100 bar, 0 to 300 bar |

Pressure   mA   V   ●●   Switch Test

# Calibrators

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**CALOG**
INSTRUMENTS ®

## LOAD CELL CALIBRATORS

The **CALOG - LC II** is a portable, handheld, precision instrument for strain gauge and load cell system testing and simulation. This model now includes the powerful ARM processor, a display function. This makes the CALOG - LC II ideal for on site load cell system simulation and faulty finding.

| MODEL | DESCRIPTION |
|---|---|
| **CALOG-LC II** | Full load cell tester / simulator / insulation tester (50 Vdc) |
| | Measure mA / volts / mV / zero balance, source mA |
| | Comes standard with li-ion batteries |
| | **Load cell Display** for handheld weight indication |
| | **Datalogging** via SD card and USB port |

( LC-TEST ) ( Insulation Test ) ( LC Display ) ( mA ) ( mV ) ( V )

## LOADCELL DISPLAY UNIT

The **CALOG - LC DISPLAY** is a portable, hand held unit which is able to display a load cell value. The Lithium Ion battery makes it possible to use the calibrator for a reasonable period of time as a portable load cell indicator in industrial plants or emergency situations.

For longer applications, such as with a cattle scale, auxiliary power can be supplied via an external 12 volt battery, charger or car cigarette lighter socket.  In order to display mass, force, strain or torque from load cells the unit allows you to set the sensitivity in mV/V, range, decimal points and units.

Zero trim can offset deadweight  and span trim is available to increase the reading accuracy with the help of calibrated weights. Selections of software options such as tare, peak hold and auto zero maintenance are included. The indicator can be used for one 350 Ohm or three 1000 Ohm load cells with a fixed 5Vdc excitation.

| MODEL | DESCRIPTION |
|---|---|
| **CALOG-LCDISPLAY** | Handheld weight indication |
| | Comes standard with li-ion batteries |
| | **Datalogging** via SD card and USB port |

( LC Display ) ( mA ) ( mV ) ( •• )

# Calibrators and displays

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**optris** infrared thermometers

Optris has been developing and manufacturing innovative infrared measurement devices for non-contact temperature measurement, including handheld thermometers, stationary industrial thermometers, and infrared cameras for point and area measurement, for more than 10 years.

Optris' comprehensive product portfolio comprises infrared measurement devices for different industrial applications as well as research & development. Along with their free thermal analysis software, their measurement devices enable constant monitoring and control of virtually every manufacturing process, and reductions in production costs through specific process optimization.

## OPTRIS Xi SERIES - THE COMPACT LINE

The Xi series is a fusion of a rugged, compact pyrometer and a modern IR camera. Thanks to analogue and digital outputs as well as the option to process up to nine freely definable measuring areas using an external process interface, the Xi camera is perfectly suited for OEM applications. With the Xi400 resolution and it's cost effectiveness, this camera is ideal for fever detection.

**Optris Xi 80:**
- Compact spot finder IR camera.
- Industrial imager with 80 x 80 pixels resolution.
- Rugged, compact Imager with motor focus.
- Autonomous operation with automatic spot finder.

**Optris Xi 400:**
- Compact industrial imager.
- Industrial imager with 382 x 288 pixels resolution.
- Distance-to-spot-size ratio up to 390:1.
- Monitoring of fast processes with framerate of 80 Hz

| MODEL | TYPE | OPTICAL RESOLUTION | SPECTRAL RANGE | TEMPERATURE RANGES |
|-------|------|--------------------|----------------|--------------------|
| Xi80 | IR Low Res | 80 x 80 pixel | 7.5 - 13 µm | -20 °C...100 °C |
| | | | | 0 °C...250 °C |
| | | | | 150 °C...900 °C |
| Xi400 | IR Med Res | 288 x 382 pixel | 7.5 - 13 µm | -20 °C...100 °C |
| | | | | 0 °C...250 °C |
| | | | | 150 °C...900 °C |

**APPLICATIONS**
Medical, fever detection
Industrial
Glass
Hot Metals

## OPTRIS INFRARED FIXED CAMERAS

A selective measuring infrared thermometer should be used if you know where the critical point or the area to be measured is positioned within your application. The size of the measuring object is important to define which lens is necessary. It is therefore possible to monitor the accurate temperature and optimize processes – if necessary – before quality problems arise.

Infrared cameras should be used in cases where more than one critical area exists or the area cannot be clearly defined. Critical areas can be localized by the camera through the demonstration of thermal images. The areas can then be permanently monitored by one or multiple fixed infrared cameras.

**NEW**

| MODEL | TYPE | OPTICAL RESOLUTION | SPECTRAL RANGE | TEMPERATURE RANGES |
|-------|------|--------------------|----------------|--------------------|
| PI400/PI450 | IR Med res | 382 x 288 pixel | 7.5 - 13µm | From -20 °C to 1500 °C |
| PI450/640 G7 | IR Glass / Plastic | 382 x 288 pixel | 7.9µm | 200 °C to 1500 °C |
| PI640 | IR High res | 640 x 480 pixel VGA | 7.5 - 13µm | From -20 °C to 900 °C |
| PI 1M | IR Metals | 382 x 288 pixel @ 80Hz switchable to 27Hz | 0.92 - 1.1µm | 450 °C to 1400 °C |
| PI 05M | IR Metals | 764 x 480 pixel | 500 - 540nm | 900 °C to 2000 °C |
| PI 08M | Laser | 764 x 480 pixel | 800nm | 575 °C to 1900 °C |

**APPLICATIONS**

Medical
Industrial
Glass
Hot Metals

# Infrared cameras and sensors

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◆optris
infrared thermometers

## OPTRIS INFRARED THERMOMETERS - COMPACT SERIES

Optris introduces new benchmarks within the area of industrial pyrometers regarding the size and roubustness of the sensing heads. The miniaturized sensing heads are especially developed for the use in small and cramped surroundings and are perfect for applications with limited space. The very advantageous cost-performance-ratio supports the integration of the pyrometers within OEM solutions and simultaneous use of the measurement devices at multiple infrared measuring facilities.

The compact series devices offer inimitable advantages for the installation in applications with high surrounding temperatures, such as within the plastic or paper industry. The robust and ambitious design allows the sensing heads to be used for temperatures up to 250°C without additional cooling. This advantage helps to reduce the costs of the mechanical installations.

| | CLASSIFICATION / SPECIAL FEATURES | SPECTRAL RANGE | TEMPERATURE RANGES |
|---|---|---|---|
| CS-LT | Single piece sensor, with smart LED display for general use | 8-14µm | -40 °C to 1030 °C |
| Csmicro-LT02 / LT15 / 3M | Single piece sensor, with electronics and smart LED display in the cable. | 8-14µm 3M: 2.3µm | -40 °C to 1030 °C 3ML: 50 °C to 350 °C 3MH: 100 °C to 600 °C |
| CSmicro LT15 / LT15H / LT22H | Single piece 2-wire sensor, with electronics and smart LED display in the cable. | 8-14µm | -40 °C to 1030 °C |
| Csmicro hs LT | Single piece 2-wire sensor, with electronics in cable with high thermal sensitivity. | 8-14µm | -20 °C to 150 °C |
| Csmicro 2M | Single piece sensor 2-wire sensor, with electronics and smart LED display in the cable. | 1.6µm | 2ML: 250 °C to 800 °C 2MH: 385 °C to 1600 °C |
| CT-LT02 / LT15 / LT22 | Two-piece sensor, for general temperature measurement | 8-14µm | LT02: -50 °C to 600 °C LT15: -50 °C to 600 °C LT22: -50°C to 975°C |
| CTfast-LT15F / LT25F | Two-piece sensor, with fast response time. | 8-14µm | -50 °C to 975 °C |
| CThot-LT02H / LT10H | Two-piece sensor, for hot surroundings | 8-14µm | -40 °C to 975 °C |
| CT-1M / 2M | Two-piece sensor, for high temperature measurement of metal | 1M: 1.0µm 2M: 1.6µm | 1ML: 485 °C to 1050 °C 1MH: 650 °C to 1800 °C 1MH1: 800 °C to 2200 °C 2ML: 250 °C to 800 °C 2MH: 385 °C to 1600 °C 2MH1: 490 °C to 2000 °C |
| CT-3M | Two-piece sensor, for low temperature measurement of metal | 2.3µm | L: 50 °C to 400 °C H: 100 °C to 600 °C H1: 150 °C to 1000 °C H2: 200 °C to 1500 °C H3: 250 °C to 1800 °C |
| CT-P3 | Two-piece sensor, for temperature measurement of thin plastic film | 3.43µm | 50 °C to 400 °C |
| CT-G5 | Two-piece sensor, for temperature measurement of glass | 5.0µm | L: 100 °C to 120 °C H: 250 °C to 1650 °C |
| CT-P7 | Two-piece sensor for temperature measurement of plastic foils and glass | 7.9µm | 0 °C to 710 °C |

CT-1M/3M

CSM-2W

CT

### APPLICATIONS

General
Hot Metals
Glass
Plastics

**New:** The CSmicro series can now be operated via the new IR mobile App (Android). The App enables to monitoring and analysing of infrared temperature measurements on a connected smartphone or tablet.

GET IT ON Google Play

Infrared sensors

## Infrared Sensors

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**optris**
infrared thermometers

## OPTRIS INFRARED THERMOMETERS - HIGH PERFORMANCE SERIES

The infrared thermometers of the high performance series consist of an innovative double laser sight, in contrast to many IR thermometers with single lasers which only mark the middle but not the size for the spot size. The two emitters follow the infrared optical path to mark the accurate size and spot of the measuring field in every distance. This greatly supports the avoidance of measurement errors.

The infrared thermometers of this class are mainly used in industrial area as well as research and development. Small measurement field sizes are of great importance for precise temperature measurement. The smallest spot size is marked by the cross over point of the two laser sights. The optris CTlaser 1M for example achievs a measurement field size of 0.5 mm in 150 mm distance. A number of different lenses allow a flexible adjustment for the single applications.

| MODEL | DESCRIPTION RANGE | SPECTRAL RANGES | TEMPERATURE RANGES |
|---|---|---|---|
| CSlaser-LT / hs LT | Single piece two-wire sensor, with electronics in sensing head for general use | 8-14µm | LT: -30 °C to 1000 °C<br>hs LT: -20 °C to 150 °C |
| CSlaser-2M | Single piece two-wire sensor, with electronics in sensing head for measurement of metals | 1.6µm | L: 250 °C to 800 °C<br>H: 385 °C to 1600 °C |
| CSlaser-G5HF | Single piece two-wire sensor, for temperature measurement of glass | 5µm | 200 °C to 1450 °C |
| CTlaser-LT / LTF | Two-piece sensor, with separate electronics box, with fast response time | 8-14µm | -50 °C to 975 °C |
| CTlaster-05M | Two-piece sensor, with separate electronic box for high temperature measurement of liquid metals. | 0.525µm | 1000 °C to 2000 °C |
| CTlaser-1M / 2M | Two-piece sensor, with separate electronic box for high temperature measurement of metals. | 1M: 1.0µm<br>2M: 1.6µm | 1ML: -485 °C to 1050 °C<br>1MH: 650 °C to 1800 °C<br>1MH1: 800 °C to 2200 °C<br>2ML: 250 °C to 800 °C<br>2MH: 385 °C to 1600 °C<br>2MH1: 490 °C to 2000 °C |
| CTlaser-3M | Two-piece sensor, with separate electronic box for low temperature measurement of metals. | 2.3µm | L: 50 °C to 400 °C<br>H: 100 °C to 600 °C<br>H1: 150 °C to 1000 °C<br>H2: 200 °C to 1500 °C<br>H3: 250 °C to 1800 °C |
| CT XL-3M | Two-piece sensor, with separate electronic box for laser applications. | 2.3µm | H: 100 °C to 600 °C<br>H1: 150 °C to 1000 °C<br>H2: 200 °C to 1500 °C<br>H3: 250 °C to 1800 °C |
| CTlaser-G5 | Two-piece sensor, for temperature measurement of glass. | 5.0µm | L: 100 °C to 120 °C<br>H: 250 °C to 1650 °C |
| CTlaser-P7 | Two-piece sensor, for temperature measurement of plastic foils and glass. | 7.9µm | 0 °C to 710 °C |
| CTratio-1M | Ratio pyrometer with separate electronic box, for high temp. measurement of metals includes glass fiber cable and laser. | 0.7-1.1µm | 700 °C to 1800 °C |

CSLASER-2M

**APPLICATIONS**
General / Hot Metals / Glass
Plastics

CT

CTLASER-1M/2M

CTXL-3M

CTRATIO-1M

**APPLICATIONS**
Plastics / Automotive / Life science / Medical
Metal / Glass / Pulp / Paper / Textile

Non contact thermal imaging

## Non contact thermal imaging

optris
**infrared thermometers**

## OPTRIS INFRARED VIDEO THERMOMETERS

The video pyrometer Optris CSvideo 2M, with its integrated video sighting allows for an additional visual assistance. Combined with the innovative and patented crosshair laser, it offers a reliable and precise measuring field adjustment in hard-to-reach areas and in cases of measuring objects being so hot the laser visor is not visible anymore.

| MODEL | CLASSIFICATION / SPECIAL FEATURES | SPECTRAL RANGE | TEMPERATURE RANGES |
|---|---|---|---|
| CSvideo-2M (L/H) | Single-piece two-wire sensor, with electronics in the sensing head for meas. of metals, video camera and cross hair laser. | 1.6μm | 2ML: 250 °C to 800°C 2MH: 385 °C to 1600 °C |
| CTvideo-1M / 2M (L/H) | Two-piece sensor, with electronic box for high temperature measurement of metals, video camera and cross hair laser | 1M: 1.0μm 2M: 1.6μm | 1ML: 485 °C to 1050 °C 1MH: 650 °C to 1800 °C 1MH1: 800 °C to 2200 °C 2ML: 250 °C to 800 °C 2MH: 385 °C to 1600 °C 2MH1: 490 °C to 2000 °C |
| CTvideo-3M (L/H) | Two-piece sensor, with electronic box for low temperature measurement of metals, video camera and cross hair laser. | 2.3μm | 3ML: 50 °C to 400 °C 3MH: 100 °C to 600 °C 3MH1: 1500 °C to 1000 °C 3MH2: 200 °C to 1500 °C 3MH3: 250 °C to 1800 °C |

**APPLICATIONS**

Food
Medical
Pharmaceutical
Industrial

## OPTRIS INFRARED THERMOMETERS - PORTABLE THERMOMETERS

The Optris portable thermometers are characterised by combining a modern industrial design with outstanding technical parameter. The high-class precision lenses assure the precise measurement of objects in short or long distances. The portable thermometer Optris LS LT consists of a one of a kind, switchable lens. This means that smallest objects can be measured in a close-up range as well as in mean distances.

The portable thermometers of the Optris MS series consist of a single point laser to mark the middle of the measuring field. All additional devices to this series feature an innovative laser sight concept. This means that the radiation takes place within the infrared optical measurement course of beam and marks the accurate measurement field in every distance. For the portable pyrometer Optris P20 (1M / 2M) this is carried out by a double laser sight whilst the Optris LS LT consists of worldwide patented cross hair laser sight system.

| MODEL | DETECTOR | SPECTRAL RANGE | TEMPERATURE RANGES |
|---|---|---|---|
| P20-LT | Thermopile | 8-14μm | 0 °C to 1300 °C |
| P20-1M / 2M / 05M | Si / InGaAs | 1M: 1.0μm 2M: 1.6μm 05M: 525μm | 1M: 650 °C to 1800 °C 2M: 385 °C to 1600 °C 05M: 1000 °C to 2000 °C |
| MS-LT | Thermopile | 8-14μm | -32 °C to 530 °C |

**APPLICATIONS**

Plastics
Automotive
Maintenance
Metal
Glass
Pulp / Paper / Textile

## Non contact thermal imaging

Non contact thermal imaging

![instrotech — INSTRUMENTATION AND PROCESS CONTROL — A Comtest Group Company]

**+ KELLER**

The Keller AG product range includes digital manometers, level probes, data loggers, remote transmission units and pressure calibrators. Digital display equipment completes our wide range. The application areas for our pressure transducers are just as broad as our product range. For example, they regulate the internal cabin pressure in aircrafts, ensure the smooth switchover from natural gas to petrol in hybrid vehicles and are used as reference sensors in laboratory technology. Keller special sensors, such as modular pressure catheters and other miniature transducers, are especially popular among researchers.

## OEM TRANSDUCERS

OEM pressure transducers from Keller. Often copied, never equalled. Keller manufactures more than 1,2 million OEM pressure transducers with a diameter between 9 and 19 mm each year. They are made from steel, hastelloy and titanium.

| MODEL | DIAMETER | RANGE |
|---|---|---|
| Series 5L | Ø12 x 4.5 mm | 10 to 200 bar, abs. / gauge |
| Series 6S | Brazed steel diaphragm | 0,5 to 200 bar, abs. / gauge |
| Series 9L | Ø17 / 21 x 5,5 mm brazed | 0,5 to 20 bar, abs. / gauge |
| Series 9LHP | Ø17 / 21 x 5,5 mm | 50 to 200 bar, absolute |
| Series 10L | Ø19 x 15 mm | 0,2 to 100 bar, abs / guage |
| Series PD9L | Ø19 x 26 mm, wet/wet | 0,1 to 50 bar diff, Line pressure max. 200bar |

## INDUSTRIAL TRANSDUCERS

Pressure transmitters consist of a pressure transducer and an electronic system which emits a signal proportional to the pressure. Each year, Keller manufactures more than 750'000 pressure transmitters in a wide variety of designs.

| MODEL | DESCRIPTION | |
|---|---|---|
| 21Y (Low cost) | Ranges: from 2 bar to 1000 bar, includes MPM plug | |
| | Output: 4-20 mA/0-10 Vdc/0,5-4,5 Vdc | |
| | Fittings: G1/4", G1/8" & 7/16" -20 UNF | 21Y |
| 21P (Analogue) | Ranges:from 0,2 bar to 1000 bar | ⟨Ex⟩ Available |
| | Output: 4-20 mA/0-10 Vdc/0-5 Vdc/0,5-4,5 Vdc | |
| | Fittings: G1/4" Male Port / 1/2" Flush Mount | |
| 23Y / 25Y (Digital / Analogue) | Ranges: from 0,2 bar to 1000 bar | |
| | Output: 4-20 mA/0-10 Vdc/0-5 Vdc/0,5-4,5 Vdc | 25Y |
| | Fittings: G1/4" Male Port / 1/2" Flush Mount | |
| 33X / 35X (Digital / Analogue) | Ranges: from 0.8 - 1000 Bar (Abs./Rel) | |
| | Output: RS-485/4-20 mA/0-10 Vdc/0-5 Vdc | |
| | Fittings: G1/4 | |
| PRD33X (Digital DP Tx'er) | Ranges: 0-350 mBar, 0-1 Bar & 0-3 Bar (Diff. Pressure) | PRD33X |
| | Output: RS-485 (Half Duplex) | |
| | Fittings: G1/4" Female | |
| 39X (DP Tx'er) | Ranges: from 3 bar to 300 Bar (Diff. Pressure) | ⟨Ex⟩ Available |
| | Output: 4-20 mA/0-10 Vdc | |
| | Fittings: G1/4" Female | |
| 41X (Low ranges) | Ranges: 30/100/300 mBar (Rel./Diff) | ⟨Ex⟩ Available |
| | Output: 4-20 mA/0-10 Vdc | |
| | Fittings: G1/4" Male | |

**APPLICATIONS**

Industrial
Harsh environments

# Pressure transmitters

# instrotech
**INSTRUMENTATION AND PROCESS CONTROL**
A Comtest Group Company

**KELLER**

## WIRELESS SOLUTIONS

Devices for measuring and transmitting pressure values via wireless interfaces such as LoRa, Bluetooth, 2G, 3G, 4G, 5G and RFID. Alarm notifications, switch outputs and additional extras round out the range of functions on offer.

**NEW**

| MODEL | DESCRIPTION |
|---|---|
| ADT1-Tube | Connection : LoRa |
| | Sensor Interfaces : RS485, I2C |
| | Battery Life : Up tp 5 years |
| | Dimensions : ø 43 mm x 165 mm |
| | Mounting : For 2" monitoring pipes |
| ADT1-Box | Connection : LoRa |
| | Sensor Interfaces : RS485, I2C |
| | Battery Life : Up to 5 years |
| | Dimensions : 162 x 82 x 54 mm |
| | Mounting : For wall installation |
| ARC1-Tube | Connection : 2G / 3G / 4G / LoRa |
| | Sensor Interfaces : RS485, SDI-12, analogue, digital |
| | Battery Life : Up to 10 years |
| | Dimensions : ø 48 mm x 330 mm |
| | Mounting : For 2" monitoring pipes |
| ARC1-Box | Connection : 2G / 3G / 4G / LoRa |
| | Sensor Interfaces : RS485, SDI-12, analogue, digital |
| | Battery Life : Up to 10 years |
| | Dimensions : 200 x 100 x 81 mm |
| | Mounting : For wall installation |
| ARC1-Box-SB | Connection : 2G / 3G / 4G / LoRa |
| | Sensor Interfaces : RS485, SDI-12, analogue, digital |
| | Battery Life : Up to 10 years |
| | Dimensions : 180 x 180 x 72 mm |
| | Mounting : For intrinsically safe transmitters |

**Bluetooth**™

**LoRa**™

## AUTOMOTIVE

Series 22 offers a reliable cost effective solution for customers requiring medium to high quantities, of mass produced transmitters. Utilising the Keller automatic brazing lines, this new technology allows crevice-free construction of the pressure port with no internal seals or O-rings, making high volumes possible at low cost.

| MODEL | DESCRIPTION |
|---|---|
| 22DT | Ranges: 14 bar (Abs.) |
| | Output: 0,5-4,5 Vdc (Ratiometric) |
| | Fittings: M14 x 1 |
| 22M/S | Ranges: 5 - 250 bar (Abs.) |
| | Output: 0,5-4,5 Vdc (Ratiometric) |
| | Fittings: G1/4", 3/8" 24 UNF-2A, 7/16"-20 UNF |

22M/S

**APPLICATIONS**
Automotive
Confined spaces

**Pressure and level transmitters**

**instrotech**
INSTRUMENTATION AND PROCESS CONTROL
A Comtest Group Company

**+KELLER**

## FLUSH MOUNT TRANSMITTERS

Flush mounting pressure transmitters are specifically designed for hygentic process applications where CIP is required. These industries include Dairies, Breweries etc.

| MODEL | DESCRIPTION |
|---|---|
| **25Y** (Analogue) | Ranges: from 0,2 bar to 400 bar |
| | Outputs: 4-20mA/0-20 mA/0-10 Vdc |
| | Fittings:Stainless Steel flange DIN 11851 |
| **35X-XHT** (High Temp) | Ranges: form -1 to 30 bar (Abs./Rel) |
| | Outputs: RS-485/4-20 mA/0-10 Vdc |
| | Fittings:G1/2" Flush |
| | MountTemp: -20 to 150 °C (Media) |
| **35X-HTC** (Very High Temp) | Ranges: form 0 to 1000 bar (Abs./Rel) |
| | Outputs: RS-485/4-20 mA/0-10 Vdc |
| | Fittings:G1/2" Flush |
| | Mount Temp: -0 to 300 °C (Media) |

25Y

35X-HTC

**APPLICATIONS**
Dairies
Breweries

## LEVEL TRANSMITTERS

Keller submersible level transmitters are known for their superior reliability and reasonable cost. They feature small size and integral signal conditioning, simplifying installation anywhere quality liquid level sensors are needed. Most commonly deployed as submersible water level sensors, Keller submersible level transmitters also can be used as tank level gauges. They are frequently paired with a compatible display/control system for use as a general purpose water level indicator or as a water level controller.

| MODEL | DESCRIPTION | |
|---|---|---|
| **26Y** (Low Cost) | Ranges: form 0,2 to 10 bar(Low Cost) | |
| | Outputs: 4-20 mA/0-10 Vdc/0-5 Vdc/0,5-4,5 Vdc | Ex |
| | Protection: IP68 | Available |
| | Diameter: 20 mm | |
| **26W** (High Quality) | Ranges: form 0,2 to 10 bar (Relative) | |
| | Outputs: 4-20 mA/0-20 mA/0-10 Vdc | |
| | Protection: IP68 | |
| | Diameter: 22 mm | |
| **36XW** (Digital / Analogue) | Ranges: form 1 to 30 bar (Abs./Rel) | Ex |
| | Outputs: RS-485/4-20 mA/0-10 Vdc | Available |
| | Protection: IP68 | |
| | Diameter:16 mm (Non-Fouling) | |

26Y

DCX22

**APPLICATIONS**
Water level monitoring
Dam levels
River levels
Reservoir

**Pressure and level transmitters**

Pressure and level transmitters

✚ KELLER

| MODEL | DESCRIPTION |
|---|---|
| **36XYK** (Sewage applications) | Ranges: form 1 to 30 bar (Abs./Rel) |
| | Outputs: RS-485/4-20 mA/0-10 Vdc/0-5 Vdc/0-2,5 Vdc |
| | Protection: IP68 |
| | Diameter: 32 mm (Non-Fouling) |
| **36XS** (Narrow) | Ranges: form 1 to 10 bar (Abs./Rel)(Narrow) |
| | Outputs: RS-485/4-20 mA |
| | Protection: IP68 |
| | Diameter: 16 mm (Non-Fouling) |
| **36Xi W CTD** (Multi Parameter probe) | Ranges: form 0,3 to 30 bar (Abs./Rel) |
| | Temp: -10 to 80 °C |
| | Conductivity: 0 - 200 Micro Siemen/ cm |
| | Outputs: RS-485/SDI-12 |
| | Protection: IP68 |
| | Diameter: 22 mm |
| **DCX16/18/22/25/38** | Submersible Data logger with cable and software |
| | Ranges from 1bar to 100 bar |

36XYK

36Xi

## DIGITAL MANOMETERS

Digital manometers have a much higher resolution and are considerably more precise than mechanical pressure gauges. Keller digital manometers allow customer-specific functions to be integrated. Besides, the display can be designed to meet individual requirements.

| MODEL | DESCRIPTION |
|---|---|
| **LEX1** | Pressure Ranges : 0…0,03 to 0…1000 bar |
| | Accuracy : ±0,05 %FS |
| | Interfaces : Rs485 |
| | Special Characteristics : Precision of up to 0,01 %FS |
| **LEO-Record** | Pressure Ranges : -1…3 to 0…1000 bar |
| | Accuracy : ±0,05 %FS |
| | Interfaces : Rs485 |
| | Special Characteristics : Measured Value Recording |
| **LEO1** | Pressure Ranges : -1…3 to 0…1000 bar |
| | Accuracy : ±0,1 %FS |
| | Interfaces : None |
| | Special Characteristics : Fast Peak Hold |
| **LEO2** | Pressure Ranges : -1…3 to 0…700 bar |
| | Accuracy : ±0,1 %FS |
| | Interfaces : None |
| | Special Characteristics : Compact and Precise |
| **ECO2** | Pressure Ranges : -1…30 to 0…300 bar |
| | Accuracy : ±0,5 %FS |
| | Interfaces : None |
| | Special Characteristics : Compact and Economical |
| **LEO5** | Pressure Ranges : -1…1 to 0…1000 bar |
| | Accuracy : ±0,05 %FS |
| | Interfaces : USB |
| | Special Characteristics : High Accuracy and Measured Value Recording |
| **LEO5-BT** | Pressure Ranges : -1…1 to 0…1000 bar |
| | Accuracy : ±0,05 %FS |
| | Interfaces : USB & Bluetooth Classic |
| | Special Characteristics : High Accuracy and Measured Value Recording |

**NEW**

LEO2

LEO-RECORD

Availab

LEO5

### APPLICATIONS

Industrial
Harsh environments

**Digital manometers**

# Digital manometers

Senix design, manufacture, sell and support a wide range of ultrasonic sensor products to measure distance to a remote object through the air without touching it. Their sensors are used in a broad array of industrial and scientific applications, including machine and motion controls, web controls (material loop and roll diameter), liquid level measurement, person/object proximity sensing – virtually anyplace where non-intrusive measurement and feedback are desired.

## ULTRASONIC DISTANCE / LEVEL MEASUREMENT (PC PROGRAMMABLE)

These small sensors are designed for durability and ease of use in tough industrial environments. They measure distances up to 15.2 m (50 ft.) and are offered in three series of differing size and measurement range. Use the "Teach" button for on site adjustment or SenixVIEW software to set powerful extended features, then view, analyze and maintain setups. Tested setups can be stored and recalled to quickly duplicate applications without calibration    ideal for OEM or maintenance operations where time saving is important. User selected interfaces and functions means a single TSPC sensor model is adaptable to many applications, reducing part numbers and inventory.

| MODEL | DESCRIPTION |
|---|---|
| TOUGHSONIC SERIES | Waterproof, dual output, push button teachable and PC configurable Level/distance transmitter, 15-30 Vdc, IP68 |
| | Outputs : Programmable mA/V/PNP or NPN switch/RS-232/RS-485 |
| TSPC-30S1 | Serial RS-232 / 485 interface. Range : 120 mm up to 4 m |
| TSPC-15S1 | Serial RS-232 / 485 interface. Range : 254 mm up to 9 m |
| TSPC-21S1 | Serial RS-232 / 485 interface. Range : 305 mm up to 15 m |
| UA-KIT-USB-232 | Senix view programming kit for RS-232 sensors |
| UA-KIT-USB-485 | Senix view programming kit for RS-485 sensors |

**APPLICATIONS**

Machine builders
Automation
Process control
Information and entertainment
Water / waste management

## CHEMICALLY RESISTANT ULTRASONIC LEVEL SWITCH / TRANSMITTER

More than just a Chemically Resistant Level Transmitter. These small sensors are designed for ease of use and reliability in both chemical and benign industrial environments. Used for liquid level measurement and control, they are also suited to many other applications at distances up to 35 feet (10.7 meters). Standard electrical interfaces provide connection to other equipment. SenixVIEW software provides adjustment, viewing, analysis, maintenance and cloning without recalibration - whether for one or a network of sensors - ideal for OEM or maintenance operations where time savings is important.

| MODEL | DESCRIPTION |
|---|---|
| CHEM SERIES | Chemically resistant, waterproof, dual ouputs, PC configurable level transmitter |
| | Outputs : Programmable mA / V / PNP or NPN switch / RS-232 / RS-485 |
| LVL-100 | Serial RS-232 / 485 interface. Range max 3 m |
| LVL-300 | Serial RS-232 / 485 interface. Range max 6 m |
| LVL-500 | Serial RS-232 / 485 interface. Range max 10 m |
| UA-KIT-USB-232 | Senix view programming kit for RS-232 sensors |
| UA-KIT-USB-485 | Senix view programming kit for RS-485 sensors |

**APPLICATIONS**

Machine builders
Automation
Process control
Information and entertainment
Water / waste management

# Ultrasonic sensors

## WWW.INSTROTECH.CO.ZA

Quality, innovation, and wide range of products are the backbone to Vishay Precision Group's load cell offering. These are the most respected brands in the industry
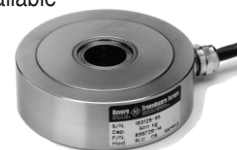
## RING TORSION LOAD CELL

The RLC is a low profile, high performance stainless steel ring torsion type load cell. The fully welded construction and glass-to-metal cable- entry ensure that this product can be used successfully in harsh environments found in the food, chemical and allied process industries. This product is suitable for small and medium platform scales, hoppers and process weighing.

| MODEL | DESCRIPTION |
|---|---|
| LCRLC | Stainless steel, hermetically sealed (IP68), low profile, ring torsion construction |
| | Capacity : 0.25t, 0.5t, 1.0t, 2.0t, 3.5t, 5.0t, 10.0t, 28.0t |
| | Class : C3 |

Available

### ACCESSORIES

| | |
|---|---|
| MNTRLC-003 | RLC mounting assemblies for 0.5ton to 5ton, material: stainless steel 304 |
| MNTRLC-002 | RLC mounting assemblies for 10ton, material: stainless steel 304 |
| LCRLCFT-001 | Self aligning foot for 0.25ton to 1ton |
| LCRLCFT-002 | Self aligning foot for 2ton to 5ton |
| LCRLCFT-006 | Self aligning foot for 10ton (height adjustable) |

**APPLICATIONS**

Silo
Hopper
Tank weighing

## COMPRESSION LOAD CELLS

The Model CSP is a multi-column compression load cell. Full stainless steel hermetically sealed construction to IP68 ensures reliable performance in harsh, washdown areas. The proven, four column design provides high accuracy and low sensitivity to eccentric loads. Output calibration by current matching (mV/V)/ohm eliminates time consuming corner calibration procedures in multicell applications.

| MODEL | DESCRIPTION |
|---|---|
| LCCSPM | Stainless steel, hermetically sealed (IP68), low profile, multi column construction |
| | Capacity : 10t, 25t, 40t, 60t, 100t |
| | Class : C3 |

Available

### ACCESSORIES

| | |
|---|---|
| LCMNTCSPM-001 | 10 ton to 25 ton mounting kit stainless steel |
| LCMNTCSPM-007 | 40 ton to 60 ton mounting kit stainless steel |
| LCMNTCSPM-002 | 10 ton to 25 ton mounting kit 3CR12 |
| LCMNTCSPM-006 | 40 ton to 60 ton mounting kit 3CR12 |

**APPLICATIONS**

Weighbridges
Silo and hopper weighing

## UNIVERSAL S TYPE LOAD CELLS

The S type load cell is a multi-purpose load cell which can be used in tension or compression. This product is suitable for a wide range of hybrid scales, overhead track scales, belt scales, and process weighing applications. Reliable sealing is ensured by the proprietary TRANSEAL potting compound and additional mechanical protection of the strain gauge area.

| MODEL | DESCRIPTION |
|---|---|
| LC9363 | Stainless steel (IP67) |
| | Capacity : 50kg, 100kg, 250kg, 500kg, 1000kg, 2500kg, 5000kg, 7500kg, 10 000kg. |
| | Class : C3 |
| LC363 | Nickel plated (IP65) |
| | Capacity : 50kg, 100kg, 250kg, 500kg, 1000kg, 2500kg, 5000kg. |
| | Class : C3 |

**APPLICATIONS**

Force measurement
Suspended hoppers
Torsion and compression

## Load cells

**VISHAY**
**PRECISION GROUP**
**Revere Transducers**

## SINGLE ENDED BEAM LOAD CELLS

The SHBxR is a fully weld-sealed stainless steel bending beam type load cell. This product is suitable for low capacity platform scales, packaging machines, hybrid scales and process weighing. Fully welded construction and water block cable-entry ensure that this product can be used successfully in harsh environments found in the food, chemical and allied industries.

| MODEL | DESCRIPTION |
|---|---|
| LCSHBXR | Stainless steel, hermetically sealed (IP68), |
| | Capacity : 5 kg, 10 kg, 20 kg, 50 kg, 100 kg, 200 kg, 350 kg |
| | Class : C3 |

**ACCESSORIES**

| | |
|---|---|
| MNTSHBxR-002 | 20 to 350 kg mounting kit stainless steel, |
| | Including base, mounting bolts and flanges |
| MNTSHBxR-001 | 20 to 350 kg mounting kit 3CR12, |
| | Including base, mounting bolts and flanges |

Available

**APPLICATIONS**

Platform scales
Packaging machines
Silo and hopper Weighing
Belt scales

The ACB is a high performance stainless steel beam type load cell. An integral mounting step removes the need for spacer plates and ensures optimum "bolt down" conditions. This product is suitable for small and medium platform scales, hybrid scales, pallet weighers, and process weighing. The fully welded construction and the cable entry ensure that this product can be used successfully in harsh environments found in the food, chemical, and allied process industries.

| MODEL | DESCRIPTION |
|---|---|
| LCACB | Stainless steel, hermetically sealed (IP68), low profile construction |
| | Capacity : 0.5 t, 1.00 t, 2.00 t, 5.00 t |
| | Class : C3 |

**ACCESSORIES**

| | |
|---|---|
| MNTACB-001 | 0.5 ton to 2 ton and 5ton SS mounting kit |
| MNTACB-003 | 0.5 ton to 2 ton and 5ton 3CR12 mounting kit |
| LCACBFT-001 | Stainless steel alignment foot for 0.25 ton to 2 ton |
| LCACBFT-002 | Stainless steel alignment foot for 0.25 ton to 5 ton |

**APPLICATIONS**

Platform scales
Silo and hopper weighing

The SSB is a stainless steel single-ended shear beam type load cell. This robust product is suitable for a wide range of platform scales, pallet scales, overhead track scales, and process weighing applications. The fully welded construction and water block cable entry ensure that this product can be used successfully in harsh environments found in the food, chemical, and allied process industries.

| MODEL | DESCRIPTION |
|---|---|
| LCSSB | Stainless steel, hermetically sealed (IP68) |
| | Capacity : 0.5 t, 1.0 t, 2.0 t, 5.0 t, 10.0 t, |
| | Class : C3 |

**ACCESSORIES**

| | |
|---|---|
| LCMNTSSB-004 | 0.5 ton to 2 ton mounting kit, including base, mounting bolts and flanges SS |
| LCMNTSSB-005 | 5ton mounting kit, including base, mounting bolts and flanges SS |
| LCMNTSSB-001 | 0.5 ton to 2 ton mounting kit, including base, mounting bolts and flanges 3CR12 |
| LCMNTSSB-003 | 5 ton mounting kit, including base, mounting bolts and flanges 3CR12 |

Available

**APPLICATIONS**

Platform scales
Pulley scales
Overhead Track scales
Silo and hopper weighing

**Load cells**

# Load cells

# instrotech
## INSTRUMENTATION AND PROCESS CONTROL
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VISHAY
PRECISION
GROUP

Revere
Transducers

## EXTENSOMETER - BOLT ON STRAIN GAUGE

The Model 178 extensometer is a load sensor designed for force measurement on any load-bearing structure. This extensometer provides the total solution for weighing, level control, stress and fatigue monitoring. The design also allows multiple sensors to be permanently mounted for more complex stress profiling and analysis. The Model 178 extensometer provides an ideal solution for non-intrusive level measurements for materials that are subject to uneven buildup, bridging, or sidewall collection. Also, liquids or wetted materials that are not suited for direct contact level measurement are an ideal application for the Model 178 extensometer. The design of the Model 178 makes it an excellent solution for retrofitting existing structures without compromise of the integrity of the vessel or structure.

| MODEL | DESCRIPTION |
|-------|-------------|
| LC178 | Alloy steel construction, hermetically sealed (IP66) |

**APPLICATIONS**

Force measurement on any load bearig structure.
Level monitoring

## DOUBLE ENDED SHEAR BEAM LOAD CELLS

5103 and 9103 transducers are double-ended, center-loaded shear beam load cells. The 5103 is constructed of nickel-plated alloy steel where the 9103 is constructed of stainless steel.. These products are suitable for tank weighing systems, low cost weighbridges, and axle weighers. A reliable sealing is ensured by the proprietary TRANSEAL potting compound and additional mechanical protection of the strain gauge area. A specially designed mounting arrangement is available, providing the ideal solution for vessel / tank weighing

| MODEL | DESCRIPTION |
|-------|-------------|
| LC5103 | Nickel plated alloy steel, hermetically sealed (IP67), low profile construction |
| | Capacity : 5k, 10k, 20k, 30k, 40k, 50k, 60k, 100k, 150k, 200k, 250k |
| | Class : D3 |
| LC9103 | Stainless steel, hermetically sealed (IP67), low profile construction |
| | Capacity : 5 k, 10 k, 20 k, 30 k, 40 k, 50 k, 60 k, 100 k, 150 k, 200 k, 250 k |
| | Class : D3 |

Ex Available

**APPLICATIONS**

Platform scales
Weighbridges
Silo and hopper eeighing

### ACCESSORIES

| LCMNT5103-001 | 5103 Mounting kit stainless steel 304 |
|---------------|---------------------------------------|
| LCMNT5103-002 | 5103 Mounting kit 3CR12 |

## SINGLE POINT LOAD CELLS

Single point load cells eliminate the need for flexures and levers thus greatly simplifying scale design and reducing costs.

| MODEL | DESCRIPTION |
|-------|-------------|
| 642 | Aluminium, silicon sealed |
| | Capacity : 5 kg, 10 kg, 15 kg, 20 kg, 30 kg, 50 kg, 75 kg, 100 kg |
| 652 | Aluminium, Double epoxy sealed, IP68 |
| | Capacity : 50 kg, 75 kg, 100 kg, 150 kg, 200 kg, 250 kg, 300 kg, 500 kg, 1000 kg |
| HPS | Stainless steel, hermetically sealed, IP68 |
| | Capacity : 6 kg, 12 kg, 30 kg, 60 kg |

**APPLICATIONS**

Packaging machinery
Low capacity scales
Checkweighers

**VISHAY PRECISION GROUP**

**Revere Transducers**

## COMPRESSION LOAD CELLS (LOW COST)

The ASC2 is a single column, stainless steel compression load cell fully compatible with original Model ASC. This product is suitable for use in road and rail weighbridges and process weighing applications. The fully welded construction and built-in surge protection ensures that this product can be used successfully in many harsh environments.

| MODEL | DESCRIPTION |
|---|---|
| LCASC2 | Stainless steel, hermetically sealed (IP68), self aligning, single column construction |
| | Capacity : 30 t, 40 t, 50 t |
| | Class : C3, C6 (0.012% accuracy) |

### ACCESSORIES

| LCMNTASC2 | Self aligning mount for truck sales, rail scales and process weighing applications |
|---|---|

**APPLICATIONS**

Weighbridges
Silo and hopper weighing

| MODEL | DESCRIPTION |
|---|---|
| LCHM2D4 | Alloy steel construction, hieratically sealed, high accuracy, low profile |
| | Capacity : 0.5 t to 20 t |
| | Class : C3 |

### ACCESSORIES

| LHY-2-104 | Load button (500 kg to 50 t) |
|---|---|
| LCHM-2-405 | Top cup, ball and bottom cup fittings (500 kg to 50 t) |
| LCHM-2-406 | Bottom and top cup, top ring and bottom ring fittings (500 kg to 50 t) |
| LCHM-2D4-RE | Rod ends (iBolts) (500 kg to 30 t) |

**APPLICATIONS**

Weighbridges
Silo and hopper weighing
Electronic truck scales
Automotive testing lines

## UNIVERSAL S TYPE LOAD CELLS

| MODEL | DESCRIPTION |
|---|---|
| LCBM3 | Stainless Steel, Hermetically Sealed IP68 S-Type Load Cell |
| | Capacity: 500 kg, 1 t, 2 t, 3 t, 4 t, 5 t, 6 t |
| | Class: C3 |

Ex Available

**APPLICATIONS**

Force measurement
Suspended hoppers
Torsion and compression

## COMPRESSION LOAD CELLS - SINGLE-COLUMN COMPRESSION CELL

The KSR is a sealed, single column, compression load cell. This product is suitable for high capacity platform scales and level control or process weighing in general. A reliable sealing and mechanical protection of the strain gage area is ensured by the use of stainless steel diaphragms and a housing which are cemented to the measuring element.

| MODEL | DESCRIPTION |
|---|---|
| LCKSR | Stainless steel, sealed diaphragm (IP66), low profile, single column construction |
| | Capacity : 6 t, 13 t, 28 t, 60 t, 130 t, 280 t |
| | Class : R1 |

**APPLICATIONS**

Vessel weighing
High capacity platform scales

# Load cells

**Load cells**

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KOBOLD Messring GmbH, one of the leading international instrumentation engineering enterprises, was founded in 1980 by Dipl.-Ing. Klaus J.Kobold. His excellent engineering knowledge led to the enterprise soon establishing itself in the market place due it patentable technology, high quality products and superior service. The "KOBOLD" brand name soon became synonymous with quality and technological advance. In the following years, independent KOBOLD companies were established in numerous countries worldwide.

## ROTAMETERS / FLOW METERS

The KOBOLD flow meter model KFR operates on the proven suspended float system, that is, the installation position is vertical and the flow is from bottom to top. The instrument is constructed as a single unit, that is, it has an acrylic housing with removable connections made of PVC, brass or stainless steel. The flow meter is thus very reasonably priced

The KOBOLD plastic flow meters of model KSM are based on the float principle with the float moving freely without friction in the measuring tube. From nominal size DN65 the devices are provided with a guide rod to stabilize the floats. The indication point is at the greatest diameter of the float. The materials are resistant to impact, bending and compressive stresses. Optional threaded fittings can be fitted on the external threads integrally extruded at the ends. The floats are supplied with integrated magnets for operation with a bistable reed contact.

| MODEL | DESCRIPTION |
|---|---|
| **KFR** | Rotameters for liquid and gases |
| | Range : Water : 5 to 75 l/min |
| | Air : 0.05 up to 6000 l/min |
| | Connections : 1/8" NPT to 1"NPT female thread |
| | |
| **KSM** | Rotameters for liquid and gases, with optional reed contact outputs |
| | Range : Water : 15 to 760 000 l/h |
| | Air : 0.8 up to 2500 $m^3n$/Hl/min |
| | Connections : G1/2", G1 1/4", G1 ½", "G2", G21/2", |
| | Screw and glue fittings |

**APPLICATIONS**

Gas analysis
Water applications
Cooling circuits
Water treatment
Plant engineering

## VISCOSITY COMPENSATED FLOW METERS

The KOBOLD flow meters and switches model VKG have a spring-loaded float, which slides within a cylindrical measuring tube and has an integral orifice which is believed to be unique. This and other design features means that it has for the first time become possible to create a flow meter and switch which fully compensates for viscosity and to a large extent for density even with very low flows. The float of these patented devices contain permanent magnets which actuate a potential free bistable reed contact mounted outside the flow thus ensuring hermetic separation between the medium and the electrical contact system. The contact is embedded within a height-adjustable plastic housing to prevent damage to the contacts by mechanical action or aggressive atmospheres.

| MODEL | DESCRIPTION |
|---|---|
| **VKG** | Material : Stainless steel / brass |
| | Range : 0.1-0.45 l/min to 5-80 l/min oil |
| | Maximum temperature / pressure : 100°C / 12 bar |
| | Connections : G1/4" to 1, 1/4 to 1NPT |
| | Output : Reed contact / analogue |

**APPLICATIONS**

Lubrication circuits
Paper-making machines
Machine tools
Oil lubrication circuits
Hydraulics
Extruding plant
Printing press

# Flow meters

## VARIABLE AREA FLOW METERS

The Kobold URK and UTS models flowmeter / monitor work on the basis of the suspended float principle. They are used for measuring the flow rates in closed pipe line systems.

| MODEL | DESCRIPTION |
|---|---|
| URK | Material : Stainless steel |
| | Range : water : 1 - 10 l/h to 15 000 - 50 000 l/h |
| | air : 0.02 - 0.2 $Nm^3$/h to 50 - 500 $Nm^3$/h |
| | Maximum temperature / pressure : 100 °C / 20 bar |
| | Connections : Flange DN15 to 80 / ANSI 1/2" to 3" |
| | Accuracy : ±2,5...4% f.s. |
| UTS | Material : Brass |
| | Range : 10 - 100 Nl/h to 0.3 - 3 $Nm^3$/h |
| | Maximum temperature / pressure : 55 °C / 3 bar |
| | Connections : M18 x 1.5, axial special connection |
| | Accuracy : ±2,5...4% f.s. |

**APPLICATIONS**

Domestic engineering
Cooling circuits
Plant engineering
Water treatment
Extrusion machines
Machine tools

## ROTATING VANE FLOW METERS

The model DPL is used to measure and monitor liquids. Its compact design allows it to be used in equipment where space is at a premium. The large number of pulse evaluation options offered means that the system is suited for a wide range of applications.
The model DRG are used for measuring and monitoring low viscous liquids. A magnet, fitted in the vane and hermetically sealed from the medium, transfers the rotary motion, non-contacting, to a Hall-effect sensor mounted in the housing. The sensor converts the rotary motion which is proportional to the flow to a frequency signal. A series-connected electronics unit converts the signal to an analogue output, limit contacts or display.
The model DRB is used for measuring and monitoring liquids. The device works according the well-known blade wheel principle. The four vane blade wheel is retained radially in a high quality sapphire bearing. The sensor is supplied ready-to-install with pipe fittings or with weld-on sleeves. The blade wheel is set in motion by the flowing medium. Magnets are embedded on hermetically sealed in the ends of the blade wheels. The magnets generate electrical pulses in a Hall-effect sensor mounted outside the flow area. Various electronics units can be used to display and monitor the volumetric flow.

| MODEL | DESCRIPTION |
|---|---|
| DPL | Material : Polypropylene material |
| | Range : 0.02-0.5 to 1-25 l/min |
| | Maximum temperature / pressure : 70°C / 10 bar |
| | Connections : G1/2" male, hose connector |
| | Output: Pulse, 4-20 mA |

| MODEL | DESCRIPTION |
|---|---|
| DRG | Material : Polypropylene / aluminum bronze / stainless steel |
| | Range : 0.5-12 to 10-140 l/min |
| | Maximum temperature / pressure : 80°C / 40 bar |
| | Connections : G18", 1/4", 1/2", 3/4", 1" female thread |
| | 1/8", 1/4", 1/2", 3/4", 1"" NPT female thread |
| | Output: Pulse, 4-20 mA, LED display, pointer indication |

| MODEL | DESCRIPTION |
|---|---|
| DRB | Material : Aluminium bronze / stainless steel |
| | Range : 5-30 to 50-750 l/min |
| | Maximum temperature / pressure : 80°C / 16 bar |
| | Connections : G1/2" to G3 female thread, ½"NPT to 3" NPT |
| | Output: Pulse, 4-20mA, LED display, contacts |

## Flow meters

Flow meters

# ELECTROMAGNETIC FLOW METER - INSERTION

An electrically conductive medium induces a voltage while flowing through an arranged magnetic field in accordance to the Faraday's induction law. The electrode current is proportional to the flow velocity and therefore the volume flow. The PIT-Sensor is available with integral or remote mount transmitter. A retracting device for mounting and dismounting under process conditions is available.
The magnetic-inductive PIT flow velocity sensor is used to measure or monitor the volume flow of liquids, slurries, pastes and other electrically conductive media while minimizing pressure drop. Pressure, temperature, density and viscosity do not affect the volume measurements. Portions of solid particles and small as pockets should be avoided.

| MODEL | DESCRIPTION |
|---|---|
| PIT | Material : Stainless steel (PTFE or PFA lining) |
| | Range : 0 to 10 m/sec water |
| | Maximum temperature / pressure : 150 °C |
| | Connections : Flange DN40 to 80, ANSI 2" to 3" |
| | Output : Relay / Analogue / Pulse / Digital display |

**APPLICATIONS**

Low viscosity liquids
Conductive liquids
Volume dosing with external electronics

# ELECTROMAGNETIC FLOW METER - INLINE

The KOBOLD DMH flowmeter is used to measure and monitor the volume flow rate of fluids, pulps, pastes and other electrically conductive materials, without loss of pressure. When an electrically conductive medium passes through a directional magnetic field, a voltage is induced in accordance with Faraday's Law of Induction. The size of this measurement voltage is proportional to the mean rate of flow and consequently also to the volume flow rate.

| MODEL | DESCRIPTION |
|---|---|
| DMH | Lining material : Hard or soft rubber / wagunit / PTFE |
| | Range : 0-1 $m^3$/hr to 0-10 177 $m^3$/hr water |
| | Maximum temperature / pressure : 150 °C / Pn40 |
| | Connections : Flange DN10 to 600, ANSI 1/2" to 24" |
| | Output : Pulse / analogue / status display / totalizer / hart |
| MIM | Magnetic Inductive All Metal Flo Meter |
| | Measuring range : 0.03 - 3 l/min ... 1.5 - 350 l/min liquids |
| | Accuracy : ±(0.8% of reading + 0.5% of FS) |
| | Maximum Temperature / Pressure : 140°C / 16 bar |
| | Connections : G ½, G ¾, G 1, G 2, 2" NPT |
| | Output : 2 x Analogue, Pulse, Frequency, Alarm or IO-Link |
| | Input : 1 x Control Input |
| | Options / Features: Integrated PT1000 / Dosing Function / Rotatable TFT |
| | Display / Bidirectional Measurement / Totalizer |
| MIK | Magnetic Inductive Flowmeter/ Monitor For Conductive Liquids |
| | Material: PPS / Sainless Steel / PVDF / Hastelloy® / Tantalum |
| | Measuring range : 0.01 - 0.5 ... 35 - 700 l/min liquid |
| | Connections: G ½ ... G 2 ¾ male thread |
| | Maximum Temperature / Pressure : 80°C / 10 bar |
| | Accuracy: ±2 % of full scale |
| | Output : Switchpoint / Frequency / Analogue |
| | LED-Indication with 2 Open Collectors / 4 - 20 mA / 1 open collector/ Counter / Batcher |

**NEW**

**IO-Link**

**APPLICATIONS**

Acids, alkalis
Pastes
Drinking water, Waste water etc.

# Flow meters

## VORTEX FLOW METER

The KOBOLD Vortex Flowmeter DVH utilizes three primary sensing elements: a vortex shedding velocity sensor, a RTD temperature sensor and a solid-state pressure transducer to measure the mass flow rate of gases, liquids and steam

| MODEL | DESCRIPTION |
|---|---|
| DVH | Material : Stainless steel / mild steel / hastelloy |
| | Range : 3-28 $m^3$N/hr to 549-9 034 $m^3$N/hr air |
| | 0.2-5 $m^3$/hr to 549-9 034 $m^3$/hr liquid |
| | Maximum Temperature / Pressure : 400 °C / PN64 |
| | Flange DN10 to 300 / ANSI 1/2" to 12" |
| | Output : Analogue / contacts / digital display |

**APPLICATIONS**
Gas, Liquid, Steam

## OSCILLATION FLOW METER

The KOBOLD flowmeter DOG-1 and DOG-3 are used for non contact flow measurement of gases. The medium flows through an orifice in a tube. Bypass bores are located at the sides. The dynamic pressure at the orifice causes part of the gases volumetric flow to flow into the bypass. The division ratio remains constant over the whole measuring range.

| MODEL | DESCRIPTION |
|---|---|
| DOG | Material : cast steel, steel, stainless steel |
| | Connections : flange DN25 to 400 |
| | Maximum temperature / pressure : 120°C |
| | Output : Pulse, analogue digital display for flow measurement and counter |
| DOG-1 | Range : 0,2-20 to 160-16.000 m³/h air |
| | Accuracy: +/- 1.5 % of measured value (air) |
| DOG-2 | Range: 0.075-3.75 to 70 - 3500 m³/h water |
| | Accuracy: +/- 0,5 % of measured value ( water) |

KOBDOG-1

**APPLICATIONS**

Compressed air, Natural gas, Biogas, Fermentation gas, Propane, Hydrogen gas, Nitrogen, and Argon

## MASS FLOW METER - CORIOLIS

The Kobold Mass Flow Meter utilizes the Coriolis principle of operation to measure mass flow. Density and temperature are simultaneously monitored and volumetric flow are additionally calculated with these parameters. Both flow meter are available with a direct mounted transmitter or in a remote mounted configuration. These units can be used to meter nearly all liquid or gaseous media and were especially designed to operate in many standard applications. These flow meters are also used for precise dosing, as well as in loading and unloading applications. Approvals for service in custody transfer (fi scal metering) applications are also available. The TME is easy to install due to a rugged housing (cast iron).

| MODEL | DESCRIPTION |
|---|---|
| TME/UMC-3 | Material : Stainless steel |
| | Range : 0-60 kg/h to 0-60 000 kg/h |
| | Maximum temperature / pressure : 180 °C / PN40 |
| | Connections : Flange DN10 to 80 / ANSI 1/2" to 3" |
| | Output : Various fieldbus options |
| TMU/UMC-3 | Material : Stainless steel |
| | Range : 0-60 kg/h to 0-2 200 000 kg/h |
| | Maximum temperature / pressure : 260 °C / PN40 |
| | Connections : Flange DN10 to 300 / ANSI 1/2" to 12" |
| | Output : Various fieldbus options |

**APPLICATIONS**

Chemical, petrochemical, food, oil, and gas industry

# Flow meters

Flow meters

## MASS FLOW METER - THERMAL

The new model DMW direct mass flow meter has been specially designed for use in gas measuring technology. An inexpensive analogue output is fitted. The model DMW is available in three versions: with or without integrated 3 ½-digit LCD display or with a 8-digit counter.
 In contrast with most volumetric flow meters the DMW mass flow meter has no moving parts, and no temperature or pressure correction is required. The meter may be installed in any position and the pressure loss is negligible. The simple mechanical construction ensures the highest degree of reliability when used with aggressive gases, and under tough industrial service conditions.

| MODEL | DESCRIPTION |
|---|---|
| DMW | Material : Stainless steel / aluminum |
| | Range :  5-100 mLN/min to 380-7 500LN/min air |
| | Maximum temperature / pressure : 50°C / 10 bar |
| | Connections : G1/4 to 1 female thread |
| | Output : Analogue / digital display / totalizer |

**APPLICATIONS**

Monitoring of gases / Varnishing facility / Coating facility / Semiconductor industry / Laboratories and research / Gas indication panels / Mechanical engineering / N2/O2 generators / Burner controller

## MASS FLOW METER - THERMAL (FOR COMPRESSED AIR AND GAS)

The KMT flowmeter series, based on the measurement principle of thermal mass flow, is ideally suited for the measurement of flow of compressed air and gases in pipes with sizes from DN 15 to DN 700. Measurement of for instance the usage of compressed air, nitrogen, Co2 or other non-corrosive gases.

| MODEL | DESCRIPTION |
|---|---|
| KMT | Material : Stainless steel / Ball valve brass |
| | Measuring ranges : 0.32-0.65 Nm$^3$/h to 78-57840 Nm/h air |
| | Maximum temperature / pressure : 80 °C / 16 bar |
| | Connection : G1/2 to G2 with ball valve / 1/2 to 2NPT with ball valve |
| | R1/2 screw-in version for DN65 to DN300 |
| | Output : 2 x analogue / switch / pulse programmable |

**APPLICATIONS**

Measurement of consumption of compressed air / Compressed air counter / Mass flow measurement of industrial gases

## FLOW METER AND COUNTER - FULL METAL VARIABLE AREA

The fluid flows from bottom to top through the meter tube of the flow meter. The float is lifted until an annular gap between the meter ring and the cone-shaped float is produced which corresponds to the flow. The forces acting on the float are in equilibrium. The forces that are mainly acting on the float comprise buoyancy according to the principle of Archimedes, the flow force of the medium and the weight force. Each position of the float corresponds to a flow value measured during calibration, which is transferred to a scale.

| MODEL | DESCRIPTION |
|---|---|
| BGN | Material : Stainless steel |
| | Range : 0.5-5 L/h to 13 000-130 000 L/h water |
| | 0.015-0.15 m$^3$/h to 240-2 400m$^3$/h air |
| | Maximum temperature / Pressure : 350 °C / PN40 |
| | Connections : Flange DN15 to DN150 / ANSI 3/4" to 6" |
| | Output : Contact / analogue / totalizer / hart / profibus pa |
| | ATEX certification available |

Available

# Mass flow meters

## FLOW METERS - OVAL GEAR WHEEL (FOR VISCOUS LIQUIDS)

The KOBOLD Gear Wheel Flow Meter series DZR have been designed for a flow measurement for viscous fluids. The measuring unit consists of a pair of gear wheels which is moved by the flow according to the principle of gear wheel motor. The bearings are – according to the material combination – either ball bearings or gliding bearings.

The KOBOLD gear wheel flow meter model KZA for viscous liquids is a low cost flow meter. The movement system consists of a gear set, which is propelled by the flow.

| MODEL | DESCRIPTION |
|-------|-------------|
| **DZR** | Material : Cast iron / stainless steel |
| | Range : 0.008-2 to 3-700 L/min oil |
| | Maximum temperature / pressure : 150 °C / 400bar |
| | Connections : G3/8" to 1" female |
| | Output : Pulse |
| | |
| **KZA** | Material : Aluminum |
| | Range : 0.02-4 L/min to 1-20 0L/min |
| | Maximum temperature / pressure : 80 °C / 160bar |
| | Connections : G1/4" to 1" female thread |
| | Output : Pulse |

## ELECTRONIC PRESSURE SWITCH / TRANSMITTER

KOBOLD pressure transmitter series PDA are cost effective electronic pressure transmitters with digital indication of actual pressure. An analogue output (0)4- 20 mA is available for remote transmission of the measured value. The device is also available with a switch output as well.

KOBOLD pressure sensors/switches series PDD are cost effective electronic pressure switches with digital indication of actual pressure. Two switch points, on /off-switch delay and hysteresis are within the measuring range programmable. A piezzo resistive ceramic sensor is used. The units can be used where high switching accuracy is needed. Long term stability, repeatability and the compact and robust design makes them ideal for use in OEM applications.

The electronic KOBOLD pressure transmitter and switch PSD with integrated display is used for continuous pressure measurement and monitoring and allows simple switching point programming without pressurisation. For each switching point, the contact function (NC contact/ NO contact), the reset points and the switching function (hysteresis/window function) can be programmed.

| MODEL | DESCRIPTION |
|-------|-------------|
| **PDD** | LED digital display or LED trend display |
| | Material : Stainless steel |
| | Range : -1 to 400 bar |
| | Output : PNP (NO / NC) |
| **PDA** | LED digital display or LED trend display |
| | Material : Stainless steel |
| | Range : -1 to 400 bar |
| | Output : 4-20 mA |
| **PSD** | Rotatable and invertible display with rotatable electrical connection; |
| | Material : Steel / die cast metal galvanised |
| | Range: -1 ... +1,5 bar ... 0 ... +600 bar |
| | Output: 1 analogue output 4-20 mA or 0-10 V (switchable) |
| | 2 switching output PNP |

# Flow meters and pressure transmitters

## DIFFERENTIAL PRESSURE TRANSMITTER

The Kobold Differential Pressure Transmitter model PAD is a micro processor-based high performance transmitter, which has flexible pressure calibration and output, automatic compensation of ambient temperature and process variable, configuration of various parameters, communication with HART®protocol. The application is various, as measuring pressure, flow and level by application method. All the data of the sensor is to be input, modified and stored in EEPROM.

As an option the Kobold Pressure Transmitter is also available as a flow meter. This flowmeter model PAD-F has added the totalizing function in the PAD transmitter. So it is available to check the flow rate and totalizing flow. It measures the flow rate by using differential pressure without compensation of temperature and static pressure.

| MODEL | DESCRIPTION |
|-------|-------------|
| **PAD** | Material : Stainless steel / monel / tantalum / hastelloy |
| | Range : +0.0075 to 41370 kPa |
| | Connection : ¼", ½" NPT |
| | Output : 4-20 mA, pulse, HART protocol |

## GUIDED WAVE RADAR LEVEL TRANSMITTER

NGM uses TDR (Time Domain Reflectometry) technology, which is also known as Guide Microwave or Guided Wave Radar. This means that low-energy and high-frequency electromagnetic impulses, generated by the sensor's circuitry, are propagated along the probe which is immersed in the liquid or solid to be measured.

| MODEL | DESCRIPTION |
|-------|-------------|
| **NGM** | Material : Aluminium alloy / stainless steel |
| | Measuring length: Max. 20 m |
| | Maximum temperature / pressure : +250 °C / +40 bar |
| | Connections : Various |
| | Output : 4 - 20 mA, switching output PNP |

Available

## BYPASS LEVEL INDICATORS

Kobold NBK bypass level indicators are used for continuous measurement, display and monitoring of liquid levels. The bypass tube is attached onto the side wall of the vessel.

| MODEL | DESCRIPTION |
|-------|-------------|
| **NBK** | Material : Stainless steel |
| | Range : Length : 6 meters max |
| | Maximum temperature / pressure : 100 °C / PN16 |
| | Connections : Flange DN15 to DN32 / ANSI 1/2" to 1 1/4" |
| | Output : Analogue / contact |

# Pressure transmitters and level indicators

## CALORIMETRIC FLOW METERS / SWITCHES

The model KAL electronic flow monitor continuously monitors liquid media. It is suited for securely monitoring flows with minimum pressure loss. Sensitivity to soiling is significantly reduced by means of a single-part sensor.

| MODEL | DESCRIPTION |
|---|---|
| KAL-K | Calorimetric flow meter, output PNP/NPN switch, IP65, plastic housing |
| | Range : 4 cm/s to 200 cm/s |
| KAL-A | Calorimetric flow meter, Output 4-20 mA, IP65 |
| | Range : 4 cm/s to 200 cm/s |
| KAL-D | Calorimetric flow meter, output PNP/NPN switch, IP65, stainless steel housing |
| | Range : 0.04 m/s to 2 cm/s |

**APPLICATIONS**

Lubrication circuits
Paper-making machines
Machine tools
Oil lubrication circuits
Hydraulics
Extruding plant
Printing press

## FLOW SWITCH

The flow monitor PPS is a flow monitor for nominal pipe sizes greater than NW 32. Fluid flow (regardless of direction) deflects the paddle and over an eccentric moves a magnet holder fitted to a permanent magnet.

| MODEL | DESCRIPTION |
|---|---|
| PPS | Paddle type flow switch with adjustable paddle |
| | Range 18 - 36 / 72 - 108 l/min water |
| | Connection G1" |
| | Output reed contact (NO/NC) |

**APPLICATIONS**

Monitoring cooling circuits
Dry running protection for pumps
Prevention of low water levels
Monitoring pipe fractures
Monitoring lubricant circuits

## LEVEL SWITCH

The plastic level switch NKP is designed for economical control of liquids in vessels. Many industrial applications can be realized with two different plastic versions each with three different mountings. The switch is remarkable for its maintenance-free design, small dimensions and reed contacts with high switch capacity.

| MODEL | DESCRIPTION |
|---|---|
| NKP | Plastic universal level switch, output NO/NC contact |
| | Maximum pressure / temperature : 10 bar / 100 °C |
| | Connections : G½", ½" M16 NPT |
| | Output : Analogue / contact |

**APPLICATIONS**

Car washes
Cleaning machines
Plastic tanks

# Flow meters and switches

**Flow meters and switches**

ELIS PLZEN a. s. belongs between one of the prominent producers of ultrasonic and induction flow meters and heatmeters in water and steam. The company was founded in 1990 and in 1997 transformed into Joint Stock Company.

The advantage of the Elis product range, is that the products are manufactured based on Elis Plzen's patented technologies. Elis Plzen is the only manufacturer of ultrasonic flow meters for liquids, in the Czech Republic and measures up against several worldwide companies, who also offer similar more advanced technology in the production of their flow meters.

## INDUCTION FLOW METERS

Induction flow meters are intended for industrial measurements of electrically conductive liquids in different fields of industry. Induction flow meters meet most demanding requirements on accuracy, reliability and long-term stability of measurements. Liquid flow rate measurements in both directions of flow are possible. The liquid flow is measured in a contactless manner; the flow meter has no moving mechanical parts and the hydrodynamic conditions at the measurement location in the pipe are absolutely unaffected.

| MODEL | DESCRIPTION |
|---|---|
| FLONET-FN20XX.1 | Flow rate and volume measurements for electrically conductive liquids. |
| | Dimensions : DN 6 to DN 1200 |
| | Max pressure : PN 40 |
| | Max temperature of measured liquid: 150°C |
| | Accuracy: ±0.2% |
| | Communication: RS-485, analogue outputs |
| FLONET-FF10XX.1 | Flow rate and volume measurement for electrically conductive liquids for food industry. |
| | Dimensions: DN 10 to DN 100 |
| | Max pressure: PN 40 |
| | Max temperature of measured liquid: 150°C |
| | Accuracy: ±0.5% |
| | Communication: RS-485, RS-232, analogue outputs |
| FLONET-FH10XX | Flow rate and volume measurement for electrically conductive liquids. |
| | Dimensions: DN 6 to DN 1200 |
| | Max pressure: PN 40 |
| | Max temperature of measured liquid: 150°C |
| | Accuracy: ±0.5% |
| | Communication: Hart, electrical outputs |
| FLONET-FS10XX | Flow rate and volume measurement for electrically conductive and abrasive liquids and mixtures. |
| | Dimensions: Wafer : DN 100 to DN 200 |
| | Flanges : DN 250 to DN 450 |
| | Pressure: PN 10 and PN 16 |
| | Max temperature of measured liquid: 150°C |
| | Accuracy: ±0.5% |
| | Communication: Hart, foundation field bus, analogue outputs |

**Flow meters**

## ULTRASONIC FLOW METERS

Battery-powered ultrasonic water meters of the FLOMIC type series have been developed to meet specific requirements of the water-supply network operators. The meters will find advantageous applications in situations where the customer, apart from simple and reliable measurements of water flow rate, pressure and water consumption, wishes to monitor leaks in the water distribution networks and subsequently process the measured data using their own firmware.

| MODEL | DESCRIPTION |
|---|---|
| **FLOMIC-FL502X / FL504X** | Flow rate, consumption and pressure measurement in water supply networks, detection of water leakages |
| | One and dual beam, compact or remote versions, IP68 |
| | Dimensions: DN 32 to DN 200 |
| | Pressure: PN 16 |
| | Flow rate sampling period 1s |
| | Storage of measured data |
| | Communication: USB, RS-232, GSM, analogue outputs |

## ULTRASONIC FLOW METERS

Ultrasonic flow meters have been designed for industrial application where they can measure flow rate of a wide range of liquid media, whether electrically conductive or not, including specific corrosive liquids. The scope of application for ultrasonic flow meters covers many functions in practically all industry lines. With the ultrasonic flow meters, the flow rate values are determined from the difference between the travel times of ultrasonic waves propagating in the measured liquid in and against the flow direction.

Ultrasonic flow meters are noted for high accuracy, excellent long-term stability of measurement over a wide range of measured values, low hydraulic losses and simple maintenance. Ultrasonic flow meters are supplied in optional configurations according to the customer requirements, for a wide range of piping sizes. The associated electronic control unit supplies power to the ultrasonic probes, processes the sensor signals and shows the measured values on the meter display. The measured values are also available as optional analogue output signals.

| MODEL | DESCRIPTION |
|---|---|
| **FLOMIC-FL503X / FL505X** | Flow rate, consumption and pressure measurement of liquids |
| | Single and dual beam versions avaliable |
| | Dimensions: DN 32 to DN 300 |
| | Pressure: PN 16, PN 40 |
| | Flow rate sampling period 1s |
| | Max temperature of measured liquid: 50°C |
| | Storage of measured data |
| | Communication: USB, RS-232, GSM and analogue outputs |
| **FLOMIC-FL3085** | Flow rate and consumption measurement in large water supply networks |
| | Single beam versions only |
| | Dimensions : DN 200 to DN 1200 |
| | Max pressure : PN 40 |
| | Max temperature of measured water: 150°C |
| | Accuracy: ±1% |
| | Storage of measured data |
| | Communication: ModBus, GSM, optical interface, analogue outputs |
| **FLOMIC-FL3005** | Flow rate and consumption measurement in large water supply networks with direct assembly |
| | Dimensions : DN 200 to DN 1200 |
| | Max pressure : PN 40 |
| | Max temperature of measured water: 150°C |
| | Accuracy: ±2% by theoretical calibration |
| | Storage of measured data |
| | Communication: ModBus, GSM, optical interface, analogue outputs |

# Flow meters

Today Siko sums up five decades of experience in length, angle and speed measurement technology. Building upon this core competence, Siko develops and manufactures groundbreaking products for automation and drive engineering. The highest demands of our industrial and machine engineering customers lead to quality, precision and functionality of our products and services.

Incremental and absolute rotary encoders, geared potentiometers as well as electronic displays for precise determination of angles, distances and speeds.

## SHAFT ENCODERS

Siko has grouped its encoder and display product families under the RotoLine brand. Depending on the measurement principles used with their typical areas of application, this results in the following four product areas: incremental rotary encoders, absolute rotary encoders, geared potentiometers and displays. Siko's extensive product portfolio allows for a variety of types that ranges from low-cost incremental encoders in miniature design with simpler mechanical fittings to sophisticated, high-resolution products such as absolute encoders – in casings made of plastic or of heavy-duty cast aluminum. In mechanical and plant engineering, Siko rotary encoders are essential for measuring lengths, angles or rotation speeds. With a large number of designs and application-oriented specifications, rotary encoders provide the basis for robust measuring procedures for a vast range of different engineering solutions. Sitting on an axle or spindle, the encoders measure values as incremental or absolute signals. The measuring principle can be optical, magnetic or based on an electrical resistance (potentiometer). The information acquired in this way can be used for upstream controls or can be presented directly on displays.

### LIGHT DUTY PLASTIC (220 IMP/REV MAX)

| MODEL | DESCRIPTION |
|---|---|
| SIKIG06-AXX | Hollow shaft encoder, single channel |
| SIKIG06-ABX | Hollow shaft encoder, dual channel |
| SIKIG06-ABO | Hollow shaft encoder, dual channel and zero ref. |

#### ACCESSORIES

| | |
|---|---|
| SIKIG06-M2 | M2 mounting flange |
| SIKIG06-HR | Bearings for high REVS, (15mm hollow shaft) |

### HEAVY DUTY ALUMINUM (1024 IMP/REV MAX)

| MODEL | DESCRIPTION |
|---|---|
| SIKIG07-AXX | Hollow shaft encoder, single channel |
| SIKIG07-ABX | Hollow shaft encoder, dual channel |
| SIKIG07-ABO | Hollow shaft encoder, dual channel and zero ref. |

#### ACCESSORIES

| | |
|---|---|
| SIKIG07-M4 | M4 mounting flange |
| SIKIG17-MR01 | Measuring wheel |

### ROBUST OPTICAL DIE CAST (5000 IMP/REV MAX)

| MODEL | DESCRIPTION |
|---|---|
| SIKIV5800 | Solid shaft, dual channel |

**Encoders**

**INSTROTECH**
INSTRUMENTATION AND PROCESS CONTROL
A Comtest Group Company

**SIKO**

## SHAFT ENCODERS CONT - ABSOLUTE ANALOGUE ENCODERS

| MODEL | DESCRIPTION |
|---|---|
| SIKAV58M | Programmable solid shaft, analogue output, multi turn |
| SIKAH36M-M | Programmable hollow shaft, analogue output, multi turn |
| SIKAH36M-S | Programmable hollow shaft, analogue output, single turn |

## ABSOLUTE ROTARY ENCODERS

**NEW**

| MODEL | DESCRIPTION |
|---|---|
| SIKWV36M/CAN | Solid Shaft CANopen |
| SIKWV36M/SSI | Solid Shaft SSI |
| SIKWV42HD | Solid Shaft SSI / CANopen / MWI (4-20mA) / MWU(0-10V) |

## GEARED POTENTIOMETERS

Absolute rotary encoders with analog output signal. The measured value is picked up via a potentiometer adjusted to the overall measurement range via an internal gearing.

### GEARED POTENTIOMETERS - LIGHT DUTY RATIOS 0.25 TO 550:1

| MODEL | DESCRIPTION |
|---|---|
| SIKGP03/1-POT | Potentiometer output, solid shaft |
| SIKGP03/1-MWI | 4-20 mA output, solid shaft |
| SIKGP43-POT | Potentiometer output with three CAM switches, solid shaft |
| SIKGP43-MWI | 4-20 mA output with three CAM switches, solid shaft |

### GEARED POTENTIOMETERS - HEAVY DUTY RATIOS 0.25 TO 550:1

| MODEL | DESCRIPTION |
|---|---|
| SIKGP04/1-POT | Potentiometer output |
| SIKGP04/1-MWI | 4-20 mA output |
| SIKGP44-POT | Potentiometer output with three CAM switches. |
| SIKGP44-MWI | 4-20 mA output with three CAM switches |

All the above are available in solid and hollow shaft

### COMPACT GEARED POTENTIOMETERS - IP52

| MODEL | DESCRIPTION |
|---|---|
| SIKGP09-POT | Potentiometer output |
| SIKGP09-MWI | 4-20 mA output |

All the above are available with optional IP68 protection

## INCLINOMETERS/TILT SENSORS

Inclinometers (or tilt sensors) measure absolute inclination in relation to the geocenter. These values are transmitted to a higher level controller via  RS232, CANopen or analogue signals.

### OPTICAL DISTANCE SENSORS FOR SHORT DISTANCES

| MODEL | RESOLUTION/REPEAT | ACCURACY | SUPPLY |
|---|---|---|---|
| SIKIK360 | 0.01° | 0.1° | 12 – 30 V |
| SIKIK360L | 0.01° | 0.5° | 12 – 30 V |

# Encoders and geared potentiometers

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# SIKO

## POSITION INDICATORS

Siko is the inventor of the Siko counter and a global market leader in the field of spindle position indicators and handwheels with position indicators. As a consistent further development, Siko is transforming the mechanical position indicators and handwheels that are so flexible in use into modern-day generations of programmable electronic spindle indicators that are also compatible with bus-controlled use.

PositionLine is a tried-and-tested product family that has grown to accommodate the needs of users. The Siko position sensors are used in a wide range of different applications, for example format adjustment on packaging machines, gauge positioning in paper-processing machines and tool positioning on woodworking or metalworking machines. Other typical areas in which the Siko position indicators can be used include reproducible process settings, workpiece positioning for special machine construction or format adjustments on glassworking machines.

### MECHANICAL ANALOG POSITION INDICATORS AND HANDWHEELS

For displaying rotational movement with high-resolution analogue indicators. Analog position indicators are available in various sizes and can be combined with many types of handwheels. The indicators are customizable thanks to special scaling.

| MODEL | DESCRIPTION |
|---|---|
| SIKS50/1 | Scale 51.7mm, reinforced plastic housing either dust-tight, oil-filled or waterproof, scale and pointer |
| SIKS70/1 | Scale 66.8 mm, reinforced plastic housing either dust-tight, oil-filled or waterproof, scale and pointer |
| SIKS80/1 | Scale 86.8 mm, reinforced plastic housing either dust-tight, oil-filled or waterproof, scale and pointer |
| SIKS120/1 | Scale 124.2 mm, reinforced plastic housing either dust-tight, oil-filled or waterproof, scale and pointer |
| SIKSZ80/1 | Scale 86.8 mm, reinforced plastic housing either dust-tight, oil-filled or waterproof, scale and pointer and 5 decade counter |
| All the above are available with hand wheels on request | |

SIKS70/1

SIKSZ80/1

### MECHANICAL DIGITAL POSITION INDICATORS

Siko position indicators are the attractive solution for the control and display of measured values. Position values can be gathered with high precision and are easily read.

#### POSITION INDICATORS

| MODEL | DESCRIPTION |
|---|---|
| SIKDA04 | High impact polamide housing, hollow shaft, 4 digit display, |
| SIKDA09S | Plastic dust proof housing, hollow shaft, 5 digit display |

#### POSITION INDICATORS - LCD DISPLAY (PC PROGRAMMABLE)

| MODEL | DESCRIPTION |
|---|---|
| SIKDE04 | Plastic housing, hollow shaft, 5 digit LCD display. |
| SIKDE10 | Glass fiber reinforced plastic, hollow shaft, 5 digit LCD display, |
| SIKDE-PRO-TOOL | Programming software |

# Position indicators

## MAGNETIC LINEAR AND ANGULAR MEASUREMENT

For decades, the robust magnetic measuring technology (MagLine) has been field-tested in the areas of distance measurement, angle measurement, and speed measurement. Measurement under extreme industrial conditions is challenging in terms of reliability and reproducibility.

The magnetic tapes used (flexible steel band with magnetic coating) are produced with the utmost precision and care at Siko. In specially developed processes, the magnetic tape systems are encoded with one or several magnetic code tracks.

The tape encoding defines the scanning principle. Incremental encoding procedures result in robust and reasonably priced all-round solutions where for example the flexible magnetic tapes can be individually cut to size prior to self-adhesive assembly. Absolute encoding of the tape material leads to system properties with particular strengths in repetition precision and measuring accuracy. Fitted with the appropriate sensors, positions can be recorded even when there is no power supply. After power interruptions, e.g. after switching off the system and switching it on again, the actual position value is recorded and implemented even if the sensor position has changed in the meantime.

### MAGSCALE ELECTRONIC RULER

| MODEL | RESOLUTION/REPEAT ACCURACY | INTERFACE | SCALE/BAND |
|---|---|---|---|
| SIKMS100/1 | Dependent on downstream electronic unit | MA100/2 | MB100/1 |
| SIKMSK1000 | 0,2 µm | LD, ABI, ABR | MB100/1 |
| SIKLE100/1 | Dependent on downstream electronic unit | 1 Vss | MB100/1 / MBR100 |
| SIKLS100 | Dependent on downstream electronic unit | 1 Vss | MB100/1 |
| SIKLEC100 | 0.1 µm / ±1 µm | LD, 1Vss, ABR | MB100/1 |
| SIKMSA111C | max. 1 µm (SSI) / ± 2 µm | SSI, 1 Vss, RS485, DRIVE-CliQ | MBA111 |
| SIKMSA213C | 1 µm / ± 1 µm | LD, 1 Vss, RS485, SSI, BiSS C, IO- LInk | MBA213 |
| SIKMS500 | Dependent on downstream electronic unit | MA502, MA506, AS510/1 | MB500/1 |
| SIKMS500H | Dependent on downstream electronic unit | MA503/1, MA504/1 | MB500/1 |
| SIKMSK320 | 0.1 mm | PP, TTL, LD, ABI, ABR | MB320/1 / MBR320/ MR320 |
| SIKMSK320R | 0.0125 mm | PP, TTL, LD, A1,A2, B1,B2 | MB320/1 / MBR320/ MR320 |
| SIKMSK210 | 0.025 mm | PP, TTL, LD, ABI, ABR | MB200/1 / MBR200/ MR200 |
| SIKMSK200/1 | 1 µm | LD, ABR, Yskawa Panasonic | MB200/1 / MBR200 MR200 |
| SIKLE200 | Dependent on downstream electronic unit | 1 Vss | MB200/1 |
| SIKLEC200 | 0,2 µm / ± 2 µm | 1 Vss | MB200/1 |
| SIKMSC500 | 0,001 mm | PP, LD, ABI, ABR | MBR500/1 / MBR500 MB500 |
| SIKMSK500/1 | 5 µm | PP, TTL, LD, ABI, ABR | MB500/1 |
| SIKMSK5000 | 0.001 mm | PP, LD, ABI, ABR | MB500/1 / MBR500 MR500 |
| SIKMSA | Dependent on downstream electronic unit | MA505 / Ma561 | MBA |
| SIKMSA501 | 1 µm LD / 5 µm SSI | SSI, RS485, LD, AB, CanOpen | MBA501 |
| SIKMSAC501 | 1 µm LD / 5 µm SSI | SSI, RS485, LD, AB, Vss, RS485 | MBA501 / MRAC501 |
| SIKMSAC506 | 12 .. 16 Bit / 0.01° | | MRAC506 |
| SIKMSK400/1 | 1.0 mm | AB | MB400 |
| SIKMSK2000 | 0.25 mm | PP, LD, AB, ABI | MB2000 |
| SIKMSK4000 | 0.25 mm | PP, TTL, LD, AB, ABI | MB4000 |

**PLEASE VISIT THE SIKO WEBSITE (www.siko-global.com) FOR A COMPLETE RANGE COMPLEMENTARY ELECTRONIC DISPLAYS AND TRANSLATION MODULES**

# Linear sensors

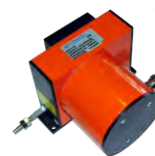Linear sensors

## LINEARLINE: WIRE-ACTUATED ENCODERS

The first choice for many areas where linear measurement of longitudinal or height adjustment is the wire-actuated encoders. Based on decades of experience, the compact Siko wire-actuated encoders provide an easy-to-install and reliable option for linear position measurement. There is a wide range of options for industrial use, even in difficult environments.

Siko wire-actuated sensors present a convincing measurement solution that is very easy to integrate. They are suited to a large number of measurement tasks under very different conditions. The wire-actuated position encoders are sturdily designed, and the wire types used mean that they have a particularly long life and are maintenance free.

Another decisive advantage of the wire-actuated encoders is the flexibility for connection to different control concepts. Because different rotary encoders can be connected to the mechanics of the wire-actuated encoder, different interfaces can be provided. In addition to analog signal outputs and incremental pulse signals, there is an option to provide different types of fieldbus connections using absolute rotary encoders.

### MINIATURE DRAW WIRE TRANSDUCERS

| MODEL | DESCRIPTION |
|---|---|
| SIKSG5 | 0 – 600mm potentiometer, current output, voltage output |
| SIKSG10 | 0 –1000/2000mm potentiometer, current output, voltage output, incremental |
| SIKSG20 | 0 – 2000mm potentiometer, current output, voltage output |
| SIKSG21 | 0 –2000mm incremental, SSI, CANopen, SAE J1939, Fieldbus, Ethernet |

### INDUSTRIAL DRAW WIRE ENCODERS

| MODEL | DESCRIPTION |
|---|---|
| SIKSG30 | 0 – 3000mm potentiometer, current output, voltage output |
| SIKSG31 | 0 – 3000mm incremental, SSI, CANopen, CANopen Safety, SAE J1939, Fieldbus, Ethernet |
| SIKSG32 | 0 – 3000mm redundant potentiometer, redundant current output |
| SIKSG42 | 0 – 4000mm redundant potentiometer, redundant current output |
| SIKSGP/1-POT | 0 – 6000mm potentiometer output |
| SIKSGP/1-MWI | 0 – 6000mm current output, voltage output |
| SIKSG60 | 0 – 6000mm incremental, SSI, CANopen, CANopen Safety, SAE J1939, Fieldbus, Ethernet |
| SIKSG62 | 0 – 6000mm redundant potentiometer, redundant current output |
| SIKSG120 | 0 – 12000mm incremental, SSI, CANopen, CANopen Safety, SAE J1939, Fieldbus, Ethernet |
| SIKSG6150 | 0 – 15000mm incremental, SSI, CANopen, CANopen Safety, SAE J1939, Fieldbus, Ethernet |

### WIRE-ACTUATED ENCODER WITH DISPLAY

| MODEL | DESCRIPTION |
|---|---|
| SIKSDE04 | Wire actuated encoder with a freely programmable electronic digital display. |
|  | Linear measurement distances up to 1000 mm |
|  | Long battery life |
|  | 5 digit LCD display |
|  | Flexible mountings position |

### POSITION SENSORS FOR HYDRAULIC CYLINDERS

Wire-actuated encoders for hydraulic cylinders
Position sensors, based on the proven wire-pull principle, for demanding and safety-critical applications, in the area of mobile hydraulics or the industrial use of hydraulic cylinders, telescope cylinders or piston accumulators

### POSITION SENSORS FOR HYDRAULIC CYLINDERS

| MODEL | DESCRIPTION |
|---|---|
| SIKSGH10 | 0 – 1000mm analogue, current and voltage, CANopen |
| SIKSGH25 | 0 – 2500mm analogue: Current and voltage, CANopen, CANopen Safety, SAE J1939, redundant analogue, Redundant CANopen, redundant SAE J1939 |
| SIKSGH50 | 0 – 5000mm analogue: Current and voltage, CANopen, CANopen Safety, SAE J1939, redundant analogue, Rredundant CANopen, redundant SAE J1939 |

# Draw wire encoders

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DRUCK & TEMPERATUR Leitenberger GmbH, was founded in Reutlingen, the industrial metropolis of the south-west of Germany, in 1969. Reutlingen lies to the south of Stuttgart, in the regional state of Baden-Wuerttemberg. The company logo dates back to this time, and has never been changed. The Swabians, the people of this region, are well known for their enterprising spirit, and thanks to our employees' innovative ideas, we soon built up a large range of instrumentation for the measurement, calibration and registration of pressure and temperature. Our wide range of products also includes digital process indicators and portable digital tachometers.

### PNEUMATIC / HYDRAULIC HAND PUMPS - PRESSURE CALIBRATION

LR-Cal pressure test pumps serve as portable pressure generators for the testing, adjustment and calibration of mechanical and electronic pressure measuring instruments through comparative measurements. These pressure tests can be carried out statically in the laboratory or workshop, or on site at the measuring point.

All LR-Cal pressure test pumps are 100% tested for functionality, performance and ruggerness.

| MODEL | DESCRIPTION | |
|---|---|---|
| **2911** | Pneumatic pressure hand pump | |
| | Range of 0 to 7 bar | |
| **2941** | Pneumatic vacuum hand pump | |
| | Range of -850 mbar to 0 bar | |
| **LPP40** | Pneumatic scissor grip hand pump, source pressure and vacuum | LPP40 |
| | Range of -850 mbar to 40 bar | |
| **LPP60** | Pneumatic scissor grip hand pump, source pressure and vacuum | |
| | Range of -850 mbar to 60 bar | |
| **LPP700** | Hydraulic scissor grip hand pump, source pressure | |
| | Range of 0 to 700 bar | |
| **LPP60-T** | Calibration pneumatic test pump (Desk mount) | LP700 |
| | Range of 0 to 60 bar | |
| | *All hand pumps supplied with carry case* | |

### DEAD WEIGHT TESTERS

LR-Cal deadweight tester / pressure balances are compact and powerful primary standards with excellent running characteristics, based on the physical principle of Pressure = Force / Area.

The direct measurement of the pressure (p = F/A), as well as the use of high-quality materials enable this small measurement uncertainty, in conjunction with an excellent long-term stability (recommended cycle of 5 years in accordance with the German Calibration Service DKD/DAkkS).

Through the selection of a dual-range piston-cylinder system (hydraulic model LR-Cal LDW-H only) with automatic measuring range switching, this measurement uncertainty can be ensured, even with a single measuring system, over a large pressure range.

| MODEL | DESCRIPTION | |
|---|---|---|
| **LDW** | Hydraulic dead weight tester, single piston | |
| | Ranges from 60 bar to 1000 bar | |
| | Stainless steel weight set in wooden carry case | |
| | Digital pressure displays optional | |

### PRESSURE COMPARATOR

Pressure comparison pumps are used for generating pressure for the testing, adjusting and calibrating of mechanical and electronic pressure measuring instruments by means of comparison measurements. These pressure tests can be carried out in laboratories, workshops or on site at the set measuring point.

| MODEL | DESCRIPTION | |
|---|---|---|
| **LSP** | Hydraulic pressure comparator | |
| | Ranges from 100 bar to 1600 bar | |
| | Digital pressure displays optional | |

# Pressure and temperature calibration

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**LR**

## PORTABLE TEMPERATURE CALIBRATORS

Due to the high reliability, accuracy and simple operation, this type of instrument, also known as "Dry Well Calibrator", is particularly suitable as a factory / working standard for the automatic testing and/or calibration of temperature measuring instruments of all types.

A major advantage is offered by the large sleeve diameters and the fast, stable temperature-control, since, as a result of these characteristics, the time for calibration can be used very effectively.

With LR-Cal Dry Block Temperature Calibrators / Dry Well Calibrators, a controllable temperature is produced within a solid block, with the aim of calibrating thermometers in the bores within this block.

A LR-Cal dry block / dry well temperature calibrator consists, at the very least, of a solid block, a temperature control unit for the block and a calibrator thermometer (internal reference) with a display for determining the block temperature.

| MODEL | DESCRIPTION |
|---|---|
| **PYROS-140/375/650** | Low cost dry block calibrator |
| | Temperature range: -24 to +125 °C / +30 to +375 °C / +35 to +650 °C |
| | Execution: **dry block** |
| | Stability: ±0.05 / ±0.15 / ±0.3 |
| | Temperature units: °C / °F |
| **QUARTZ** | High accuracy day block calibrator |
| | Temperature range: -30 to +150 °C |
| | Execution: **dry block** |
| | Stability: ±0.03 (@ 0 °C) |
| | Temperature units: °C / °F / K |
| **PULSAR-35Cu** | High accuracy dry block calibrator |
| | Temperature range: +20 to +600 °C |
| | Execution: **dry block** |
| | Stability: ±0.05 (@ 450°C) |
| | Temperature units: °C / °F / K |
| **PULSAR-80Cu** | High accuracy dry block calibrator |
| | Temperature range: +20 to +550 °C |
| | Execution: **dry block** |
| | Stability: ±0.05 (@ 450 °C) |
| | Temperature units: °C / °F / K |
| **SOLAR** | High temperature range dry block calibrator |
| | Temperature range: +200 to +1100 °C |
| | Execution: **dry block** |
| | Stability: ±0.3 (@ 1000 °C) |
| | Temperature units: °C / °F / K |
| **FLUID100** | High accuracy temperature bath |
| | Temperature range: -12 to +125 °C |
| | Execution: **fluid bath** |
| | Stability: ±0.02 (@ -5 °C) |
| | Temperature units: °C / °F / K |
| **FLUID200** | High accuracy temperature bath |
| | Temperature range: Ambient to +200 °C |
| | Execution: **fluid bath** |
| | Stability: ±0.02 (@ 150 °C) |
| | Temperature units: °C / °F / K |

Pyros

Solar

Pulsar

Fluid

**Temperature calibration**

# instrotech
## INSTRUMENTATION AND PROCESS CONTROL
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# MICHELL
## Instruments

Michell Instruments is an international leader in high-precision sensing with 40 years experience in the field, specialising in instrumentation for dew point, relative humidity and oxygen analysis. The company serves industries as diverse as petrochemical and pharmaceutical to power generation and food processing.

## HUMIDITY / TEMPERATURE SENSORS

Maintaining the right level of humidity is critical in many situations, each of which has its own set of requirements. Our wide range of relative humidity sensors, transmitters and probes allows customers to choose the right fit for their applications.

| MODEL | DESCRIPTION |
|---|---|
| WM-522 | Mini wall-mounted transmitter |
| | Output 1 : 4-20 mA = 0 - 100 %RH |
| | Output 2 : 4-20 mA = 0 - 100 °C |
| WM-523 | Mini wall-mounted transmitter with LCD display |
| | Output 1 : 0-10 Vdc = 0 - 100 % RH |
| | Output 2 : 0-10 Vdc = 0-100 °C |
| DT722 | Rugged industrial transmitter with a probe |
| | Output 1 : 4-20 mA = 0 - 100%RH |
| | Output 2 : 4-20 mA = 0 - 100 °C |
| DT722 | Rugged industrial transmitter with LCD display and a probe |
| | Output 1 : 4-20 mA = 0 - 100 %RH |
| | Output 2 : 4-20 mA = 0 - 100 °C |
| PCMini52 | Mini digital relative humidity and temperature probe, with analogue output |
| | Range (RH): 0 - 100% RH |
| | Range (T): -20 to 80 °C |
| | Output: 0-1,0-5,0-10 V |
| PC33 / 52 | Analog relative humidity and temperature probe |
| | Range (RH): 0 - 100% RH |
| | Range (T): -20 to 80 °C |
| | Output: 0-1,0-5,0-10 V or 4-20 mA |
| PC62 / 62V | Digital relative humidity and temperature probe, with analogue or digital output |
| | Range (RH): 0 - 100% RH |
| | Range (T): -20 to 80 °C |
| | Output: 0-1,0-5,0-10 V, RS-232, RS-485 |
| HS3 | Hygrosmart digital programable humidity and temperature probe with |
| | interchangeable sensors |
| | Range (RH) : 0-100% RH |
| | Range (T) : -40 to 85 °C |
| | Output : 2+ voltage outputs (programmable) |
| | : 1 + digital MODBUS RTU over RS-485 |

### APPLICATIONS

Environmental control
HVAC control
Precision manufacturing

## HUMIDITY / TEMPERATURE HANDHELD METER

The MDM25 is a portable, battery-operated handmeter, and is available with a number of different probe configurations. It displays relative humidity, temperature and one calculated value, making this hand-held hygrometer suitable for a wide range of applications. The user can choose to display either °C or °F.

| MODEL | DESCRIPTION |
|---|---|
| MDM25 | Digital handheld temperature / humidity meter with various probes |
| MDM25-FPR | Fixed probe |
| MDM25-SPR | Standard probe |
| MDM25-SWPR | Sword type probe |
| MDM-HTPR300 | 300mm remote high temperature probe |
| MDM-HTPR500 | 500mm remote high temperature probe |

# Humidity and temperature sensors

**instrotech**
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**MICHELL**
Instruments

## DEW POINT TRANSMITTER

The SF52 dew-point transmitter is a simple, cost effective sensor designed for use in harsh industrial dryer applications where reliability and toughness are required at an economical cost.

| MODEL | DESCRIPTION |
|-------|-------------|
| **SF52** | Dew-point transmitter |
| | Range (dp): -40 to 60 °C, Dew Point temperature |
| | Output: 0-1,0-5,0-10 V or 4-20 mA |
| | Fitting: 1/2" BSP |

**APPLICATIONS**
Precsion manufacturing
OEM dryer applications

## RELATIVE HUMIDITY AND TEMPERATURE PROBE

PFMini72 relative humidity probes are equipped with the Hygrosmart relative humidity sensor/converter. This interchangeable module has miniaturized electronics and does not require recalibration.

| MODEL | DESCRIPTION |
|-------|-------------|
| **PFMini72** | Mini relative humidity and temperature probe |
| | Range (RH): 0 - 100% RH |
| | Range (T): -20 to 80 °C |
| | Output (RH): 0-1V |
| | Output (T): 0-1V or 3 Wire Pt100 |

**APPLICATIONS**
Metrological

## DEW POINT TRANSMITTER

The Easidew is a dew-point transmitter with a 5/8" process connection. It is designed for ease of use, incorporating all of the features needed to make installation and operation into your air or gas management system as simple as possible.

| MODEL | DESCRIPTION |
|-------|-------------|
| **EASYDEW** | Tx2 wire Dew Point Transmitter |
| | Range (dp): -100 to 20 °C |
| | Output: 4-20mA, two wire |

## DEW POINT TRANSMITTER

The Easidew I.S. (intrinsically safe) transmitter is a dew-point transmitter designed and certified for use in hazardous area applications (flammable or explosive gases) in all regions with certification from: IECEx, CSA, FM and ATEX.

| MODEL | DESCRIPTION |
|-------|-------------|
| **EASYDEW** | Tx2 wire Dew Point Transmitter |
| | Range (dp): -100 to 20 °C |
| | Output: 4-20mA, two wire |

Ex
Available

**APPLICATIONS**
Natural gas
Petrochemical
Refinery

## RELATIVE HUMIDITY TEST CHAMBER

The HydroCal100 provides a stable test chamber to quickly evaluate the performance of relative humidity sensors across a wide range of 5 to 95% relative humidity.

| MODEL | DESCRIPTION |
|-------|-------------|
| **HYGROCAL100** | Generation range : 5 to 95% RH |
| | RH stability : ±0.5% |
| | RH accuracy : ±0.8% |
| | Temperature accuracy : ±0.2 °C |

# Humidity and temperature sensors

Humidity and temperature sensors

![instrotech INSTRUMENTATION AND PROCESS CONTROL - A Comtest Group Company]

**MONITRAN**

Monitran, a world leader in the design, development and manufacture of vibration sensors and monitoring systems for vibration and displacement measurement. Their products include general and special purpose accelerometers, velocity sensors, eddy current probes and LVDTs. They are used in a diverse range of applications, such as; automotive, aerospace, industrial processing, power stations and wind turbines. Also, as an OEM we can design and develop custom built sensors.

### LINEAR VARIABLE DIFFERENTIAL TRANSFORMER

The LVDT, Linear Variable Differential Transformer is a well-established transducer design which has been used for many decades for accurate displacement measurement and within closed loops for position control.

| MODEL | DESCRIPTION |
|---|---|
| **MTN/E Series** | Economy Series |
| | Ranges : 0.5 mm up to 550 mm |
| | Output : AC / 0-5 V / 0-10 V / 4-20mA / DC Bipolar |
| **MTN/IE Series** | Industrial Series |
| | Ranges : 0.5 mm up to 550 mm |
| | Output : AC / 0-5 V / 0-10 V / 4-20mA / DC Bipolar |
| **MTN/M Series** | Miniature Series |
| | Ranges : 0.25 mm up to 50 mm |
| | Output : AC |

### DC OUTPUT VELOCITY TRANSDUCER / ACCELEROMETER

General purpose, top-entry velocity transducer / accelerometer with DC output.
Made from robust stainless steel throughout for continuous vibration monitoring in harsh environments. Sealed to Ip67 with industry standard two-wire 4-20mA output proportional to sensor range that can connect directly to PLC, DCS and industrial controllers.

| MODEL | DESCRIPTION |
|---|---|
| **MTN1185CQ** | 4-20mA dc output (proportional to rms velocity), includes M8 quick fit stud |
| | Ranges : 10 mm/s up to 100 mm/s |
| | Cable : 5 meters standard |
| | Intrinsically safe versions avaliable |
| **MTN1187CQ** | 4-20mA dc output (proportional to rms acceleration), includes M8 quick fit stud |
| | Ranges : 1g rms to 20g rms |
| | Cable : 5 meters standard |
| | Intrinsically safe versions avaliable |

### DC OUTPUT VELOCITY AND TEMPERATURE TRANSDUCER

General purpose, side-entry velocity transducer with DC and temperature outputs. Made from robust stainless steel throughout for continuous vibration monitoring in harsh environments. Internal electronics are enclosed in a Faraday cage and isolated to minimise noise. Sealed to Ip65 with industry standard 4-20mA output proportional to sensor and temperature range that can connect directly to PLC, DCS and other industrial controllers.

| MODEL | DESCRIPTION |
|---|---|
| **MTN2285STC** | 4-20 mA dc output (proportional to rms velocity), includes M8 quick fit stud |
| | 10 mV/°C temperature output |
| | Ranges : 10 mm/s up to 100 mm/s |
| | Cable : 5 meters standard |

# Velocity / Accelerometers

**MONITRAN**

## PORTABLE VIBRATION METERS

The MTN/5000 features a 3.5 inch TFT touchscreen with an easy-to-navigate menu that enables users to set data sampling periods, ranges and accuracy levels plus vibration threshold (alarm) levels on a channel- bychannel basis or across all channels. In addition, the system has 12 digital I/O channels, enabling the MTN/5000 to be integrated with other systems.

| MODEL | DESCRIPTION |
|---|---|
| MTN5000 | Hand held acceleration / velocity / displacement meter |
| | Acceleration: 20g |
| | Velocity: 200mm/s |
| | Displacement: 2000µm |
| | Modes: RMS, peak, peak-peak, crest factor, bearing acceleration, bearing velocity |

## PORTABLE VIBRATION METERS

Hand-held Vibration Monitor, peak-to-peak and RMS acceleration, velocity and displacement outputs.

| MODEL | DESCRIPTION |
|---|---|
| MTNVM220 | Compact, rechargeable, portable handheld vibration Meter |
| | Acceleration : 20 g |
| | Velocity : 200 mm/s |
| | Displacement : 2000 µm |
| | Modes : RMS, Peak, Peak-peak, Crest factor, bearing acceleration, bearing velocity |
| | Memory : 100 slots storing vibration, time, date, filter, units, crest factor (Memory not downloadable to PC) |
| MTN/VM330D | Compact, rechargeable, portable handheld vibration Meter |
| | Acceleration : 20 g |
| | Velocity : 200 mm/s |
| | Displacement : 2000 µm |
| | Modes : RMS, Peak, Peak-peak, Crest factor, bearing acceleration, bearing velocity |
| | Memory : 100 slots storing vibration, time, date, filter, units, crest factor |
| | PC Data Transfer : Vibration, time, date, filter, units, crest factor values to CSV file for use with spreadsheet |

![instrotech logo] **instrotech**
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A Comtest Group Company

**SCANCON** Industrial Encoders

SCANCON Encoders A/S is a privately-held manufacturer of incremental and absolute encoders located in Hillerød, Denmark. The company was founded in 1973 as an engineering design firm. However, it quickly expanded it's expertise in designing EX-Proof encoders to include offering a full range of encoders. Over the years, the company has continued to design and manufacture innovative encoder and encoder-related products.

Industries Scancon encoders are used in include Oil & Gas, Windpower, Mining, Solar, Automated Machinery, Steel and Paper. Outputs inludes Incremental, Analgue, SSI, CANopen, Profibus, DeviceNet, Bit Para, Fiber, eCode & Modbus.

### MICRO ENCODERS

| MODEL | DESCRIPTION - APPLICABLE FOR ALL MODELS |
|---|---|
| SCA-16/18/787 | Diameter : 16 mm to 20 mm |
| SCH1-6G/16F | Resolution : up to 3600 ppr |
| | Shaft : ø1.5 mm to ø1/8 inch |
| | Hallow shaft : ø1.5 mm to ø4 mm |

### MINI ENCODERS

| MODEL | DESCRIPTION - APPLICABLE FOR ALL MODELS |
|---|---|
| SCA-24/27-IP65/28/30 | Diameter : 24mm to 41 mm |
| SCA34/36, 5/38/40 | Resolution : up to 367500 ppr |
| SCA-41/BM/2SUN/2RMHF | Shaft : ø4 mm to ø1/4 inch |
| SCH-24/32B/32F | Hallow shaft : ø3 mm to ø1/4 inch |

### STANDARD ENCODERS

| MODEL | DESCRIPTION - APPLICABLE FOR ALL MODELS |
|---|---|
| SCA-50/50-G SR/58/58-2RK/2R58/2Q/2RHIDS | Diameter: 50mm to 68mm |
| | Resolution: up to 12500 ppr |
| | Shaft: ø6mm - ø11mm |
| | Hollow Shaft: ø6mm - ø16mm |
| SCA-80/50B/50F/50L | |
| SCH-50I/50IB/50IB-SR | |
| SCH-50IF/50IF-SR | |
| SCH58B/58F | |

### HEAVY DUTY ENCODERS

| MODEL | DESCRIPTION - APPLICABLE FOR ALL MODELS |
|---|---|
| 2RMHD/2RHDS/2RCI | Diameter: 60mm to 115mm |
| SCA115/ | Resolution: up to 12500 ppr |
| SCH68B/68F/68DW/80 | Shaft: ø6mm - ø15mm |
| SCH-94/94DOL/94L | Hollow Shaft: ø6mm - ø1in. |

# Encoders

# EX-PROOF ENCODERS

| MODEL | DESCRIPTION - APPLICABLE FOR ALL MODELS |
|---|---|
| SCA24EX | Diameter: 24mm to 115mm |
| 2QEX-A/2CEX-A | Resolution: up to 10000 ppr |
| 2REX-A/ | Shaft: ø4mm - ø11mm |
| 2REX-A-SR | Hollow Shaft: ø2mm - ø1inch |
| 2REXI-A/ | |
| 2REXI-A-SR | |
| SCH24EX/2REX-H | |
| 2REX-H-SR/ | |
| 2REX-H-SA | |
| 2REXI-H | |
| SCH-86BEX/86FEX | |

## EX-PROOF MINING ENCODERS

| MODEL | DESCRIPTION - APPLICABLE FOR ALL MODELS |
|---|---|
| REXM-A-SA/R | Diameter: 24mm to 115mm |
| EXM-H-SR | Resolution: up to 10000 ppr |
| REXM-H-SA | Shaft: ø4mm - ø11mm |
| SCH-86BXM | Hollow Shaft: ø2mm - ø1inch |

## STAINLESS STEEL ENCODERS

| MODEL | DESCRIPTION - APPLICABLE FOR ALL MODELS |
|---|---|
| SCA50-SR/ | Diameter: 50mm to 115mm |
| 2REX-A-SR | Resolution: up to 12500 ppr |
| 2REXI-A-SR/ | Shaft: ø6mm - ø11mm |
| REXM-A-SR | Hollow Shaft: ø8mm - ø16mm |
| SCH-50IB-SR/ | |
| 50IF-SR | |
| 2REX-H-SR/ | |
| REXM-H-SR | |
| SCH86BXM | |

# Ex-Proof Encoders

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**selet**

Selet was established in 1973, in Torino Italy during thee big Industrial Revolution era. They started off by manufacturing electronic boards for the Oleodynamic and Electrical fields. After a year, Selet then started producing components for the Automation field, with the idea to replace mechanical limit switches, with inductive sensors.

In the 1980's, Selet invested and put into production, a new range of sensor technologies, namely; capacitive and photoelectric sensors. Selet was the first Italian company to invest in gate-array technology for their new products and in the mid 1980's, started cooperation worldwide with various component manufacturers, developing electronic components for their sensors. During these years, Selet also started the production of rotary incremental and absolute encoders.

### INDUCTIVE PROXIMITY SWITCHES

| MODEL | DESCRIPTION |
|---|---|
| BO1 / BO3 | Suitable for limit / speed switches |
| | Connection of cable or plug |
| | Outputs : PNP, NPN, NO/NC and AC Switches |
| | Diameter : 8 / 10 / 12 / 18 / 28 / 50 mm |
| | Ranges : 2 / 3 / 4 / 8 / 15 / 35 / 50 mm |

### ANALOGUE OUTPUT PROXIMITIES

| MODEL | DESCRIPTION |
|---|---|
| B50 | Suitable for Distance Measurement |
| | Connection : Plug |
| | Outputs : 0-10 Vdc or 4-20 mA |
| | Diameter : 12 / 18 / 30 / 80 x 80 mm |
| | Ranges : 4 / 8 / 10 / 60 mm |

### CAPACITIVE PROXIMITY SWITCHES

| MODEL | DESCRIPTION |
|---|---|
| K01 | Cylindrical and block mount switches |
| | Connection : Plug / cable |
| | Outputs : PNP / NPN / NO / NC switches |
| | Diameters : 18 / 22 / 30 / 32 / 50 mm |
| | Ranges : 2-70 mm |

### PHOTO-ELECTRIC SWITCHES / BEAMS

| MODEL | DESCRIPTION |
|---|---|
| OCV87D | Direct Switches |
| | Ranges / diameter : 0-1 m / 30 mm |
| | Connection : Cable |
| | Outputs : PNP / NPN / NO / NC switches |
| OCV87C | Reflective Switches |
| | Ranges / diameter : 0-5 m / 30 mm |
| | Connection : Cable |
| | Outputs : PNP / NPN / NO / NC switches |
| OCV81 | Beam Switches |
| | Ranges / diameter : 0-15 m / 18 mm |
| | Connection : Cable |
| | Outputs : PNP / NPN / NO / NC switches |

BEAM

### ULTRASONIC SENSORS PROXIMITY

| MODEL | DESCRIPTION |
|---|---|
| UKS18 | Cylindrical Diameter : 18mm |
| | Ranges : 100 to 380mm / 100 to 880mm / 150 to 1500mm / 200 to 2100 mm |
| | Outputs : PNP / 0-10V & PNP / 4-20mA & PNP |
| FSX | Fork Sensor particularly suited for detection of transparent and metal labels |
| | Ranges : Slot Width of 3 mm |
| | Outputs : PNP / NPN |

# Proximity sensors

Fluke Corporation is the world leader in the manufacture, distribution and service of electronic test tools and software.

Since its founding in 1948, Fluke has helped define and grow a unique technology market, providing testing and troubleshooting capabilities that have grown to mission critical status in manufacturing and service industries.

## MULTI FUNCTION PROCESS CALIBRATOR

Take along the Fluke 725 Multifunction Process Calibrator, and you're equipped to test and calibrate almost any process parameter. The 725Ex Intrinsically Safe Multifunction Process Calibrator is powerful yet easy-to-use. Combined with one of the (8) Fluke-700PEx pressure modules, the 725Ex is able to calibrate almost any process instrument likely to need service in an area where explosive gasses may be present. Measure and source mA, volts, temperature (RTDs and thermocouples), frequency, ohms, and pressure, using optional pressure modules. The 725's split display lets you view input and output values simultaneously. For valve and I/P tests, you can source mA while measuring pressure. The 725 has auto-stepping and auto-ramping for remote testing, plus 25% stepping for fast linearity tests. From the moment you pick it up, the Fluke 725 is ready to perform. Its simple controls, without menus, make operation easy. Its memory functions make set up fast. And its rugged design lets it work as hard as you do.

| MODEL | DESCRIPTION |
|---|---|
| **FLUKE725** | Measure V / mA / RTD / TC / frequency, |
| | Source/simulate V / mA / TC / RTD / frequency |
| | Split display for simultaneous measure and source |
| | Includes test leads, test clips and user manual on CD-rom |

| MODEL | DESCRIPTION |
|---|---|
| **FLUKE725Ex** | Measure V / mA / RTD / TC / frequency |
| | Source/simulate V / mA / TC / RTD / frequency |
| | Split display for simultaneous measure and source |
| | Includes test leads, test clips and user manual on CD-rom |

Expert in ultra-precision Position Sensors and High Power/High Energy Resistors, MCB Industrie provides tailored solutions to the specific requirements of the airborne and spatial systems, ground vehicles, railway rolling stocks, robotics and power converters (HVDC). MCB products are engineered with the focus of combining unparalleled electrical and mechanical behaviors in the most demanding environments, with an extended life span.

**MCB** INDUSTRIE

### LINEAR AND PRECISION POTENTIOMETERS (HEAVY DUTY)

| MODEL | DESCRIPTION |
|---|---|
| **H28** | Linear potentiometers, heavy duty IP55 (Optional IP64) |
| | Linearity = 0.1% |
| | Ranges : 0 to 1000 mm |

### LINEAR AND PRECISION POTENTIOMETERS (LIGHT DUTY)

| MODEL | DESCRIPTION |
|---|---|
| **P12** | Linear potentiometers, light duty, IP55 |
| | Linearity = 0.5% |
| | Ranges : 0 - 300 mm |

### LINEAR AND PRECISION POTENTIOMETERS

| MODEL | DESCRIPTION |
|---|---|
| **H20** | Linear potentiometers, short stroke, miniature |
| | Linearity =1% |
| | Ranges : 10 mm (1K) |

**Linear potentiometers**

## OXYGEN IN-LINE MEASUREMENT

Canongate Technology's oxygen measurement device is a self contained disolved oxygen sensor, making use of industry proven optical technology. Ideally suited to beverage applications it has been engineered to compliment and accompany other Canongate Technology instruments.

| MODEL | DESCRIPTION |
|---|---|
| **OXYCHECK** | Resolution of 0.1 ppb, low maintenance, suitable for stream CIP |
| | Accuracy : level <80 ppb accuracy = ±4 ppb |
| | Level <1680 ppb accuracy = ±16 ppb |
| | Level <4000 ppb = ±40 ppb |
| | Measuring Range : 0 to 25 ppm |
| | Repeatability : +/- 0.1 ppb |
| | Analogue outputs : 4 - 20 mA (current sink) user scaleable |

## NON-SAMPLING, IN-LINE $CO_2$ MEASUREMENT

As the world's leading $CO_2$ monitor and control system, Embra CarboCheck uses the well known saturation pressure / temperature technique for accurate, non-sampling measurement.
Embra CarboCheck can be used for measurement alone or configured as a control system.

| MODEL | DESCRIPTION |
|---|---|
| **CARBOCHECK** | Accurate monitoring and control of dissolved $CO_2$ levels in carbonated beverages |
| | Improved "right first time" carbonation figures in-line or in tank |
| | More efficient process control |
| | Reduction in re-work |
| | Accuracy : +/-0.02 vol/vol (+/-0.04 g/l) |

## MECHANICAL CHART RECORDER FOR FLOW, PRESSURE & TEMPERATURE

A world leader in circular chart recorders, Rototherm has become the standard for accurate, reliable measurement across numerous industries such as Gas Transmission, Oil & Gas, Refining & Petrochemical, Heat Treatment, Dairy and Plastics.

Our robust proven recorders are designed for flexibility, with interchangeable pressure and temperature systems, that can be implemented simply and quickly, allowing you with a recorder that can satisfy numerous range requirements. At the same time, we have worked with our users to design the recorder to be calibrated quickly, maximising your productivity.

| MODEL | DESCRIPTION |
|---|---|
| **CLEARSCAN** | 1, 2 or 3 pen temperature, pressure & flow recording |
| | Uses proven and reliable Rototherm temperature, pressure and differential pressure systems |
| | Simple installation and maintenance requirements |
| | Wall, panel, portable or pipe mounting available |
| | Fully mechanical versions available |
| | Electrical, battery or mechanical chart drive options |
| | Large 12 inch diameter chart |
| | Large choice of temperature, pressure and differential pressure ranges |

**$Co_2$ and $O_2$ sensors**

## Rototherm
### Canongate Technology

Joining Rototherm Group in 2012, Canongate Technology's level and liquid concentration products are supplied to leading players within the Beverage, LNG, Petrochemical, Pharmaceutical, Nuclear & Transport Industries throughout the world. Our unique non invasive ultrasonic technology allows for significant reduction in installation and maintenance costs thus reducing the overall cost of ownership for their customers.

Canongate is a leading supplier to the beverage industry, with complementary measurement products such as oxygen and carbon dioxide sensors. Proven across the energy industry, Canongate products have the relevant certifications and corresponding documentation to be used in hazardous areas.

## DENSITY / CONCENTRATION TRANSMITTER

DensiCheck TX is an economic answer to the problem of monitoring liquid concentration and density in a wide variety of applications. Available as an in-line transmitter in both Non-invasive and invasive formats. DensiCheck TX provides a continuous output of concentration to enable processes to be optimised.

The result - reduced rework, improved quality and lower costs.

| MODEL | DESCRIPTION |
|---|---|
| DENSICHECK | Density/concentration transmitter for inline monitoring. |
| | High accuracy, low maintenance liquid concentration monitoring of acids, solvents and alcohols |

Ex Available

**APPLICATIONS**

Whisky / brandy distilling
Acid, solvents and
Alcohol concentrations

## NON INVASIVE LEVEL TRANSMITTERS

VesselCheck is a highly versatile and accurate range of non-invasive liquid level measurement systems, comprising a signal processing unit and ultrasonic transceivers. SpotCheck is a liquid level switch for use in applications where avoiding contact is vital. The sensor is clamped externally to the wall of the pipe or vessel. The method of measurement is suitable for steel, plastic or glass up to 50mm thick.

| MODEL | DESCRIPTION |
|---|---|
| VESSELCHECK-ST1 | Non-Invasive tank level gauge, (up to 3m) |
| VESSELCHECK-ST1AD | Non-Invasive tank level gauge with ATEX sensor and processor/display (up to 3m) |
| VESSELCHECK-ST2 | Non-Invasive tank level measurement system for 2 tanks (up to 25m) |
| VESSELCHECK-ST4 | Non-Invasive tank level measurement system for 4 tanks without reference sensor (up to 25m) |
| SPOTCHECK-1000 | Non-Invasive point level detector for tanks and pipes |

Ex Available

VESSELCHECK-ST1AD

## CONTROLLER / ANALYSER - BEER ANALYSER FOR % ALCOHOL / °PLATO, $CO_2$ AND $O_2$

As the world's leading $CO_2$ monitor and control system, Embra CarboCheck uses the well-known saturation pressure / temperature technique for accurate, non-sampling measurement Embra CarboCheck can be used for measurement alone or configured as a control system.

| MODEL | DESCRIPTION |
|---|---|
| MULTICHECK | One system measures all, low maintenance |
| | Measuring ranges :0 to 20% alcohol by volume |
| | Plato : 0 to 30 ° Plato |
| | $CO_2$ : 0 to 20gl; 0 to 10 vol/vol $CO_2$ |
| | $O_2$ : 4ppb to 25 ppm $O_2$ |
| | Operating Temperature : 0 to 30 °C |

# Non invasive level and density transmitters

Temperature Management Systems (TMS) commenced operation in 1996 after realising the need for a specialised temperature entity service in Northern KwaZulu Natal, and has since grown into a recognized force in the field of temperature measurement and control not only in South Africa, but around the world.

Their expertise is based around the primary and secondary aluminium industry, with numerous patents being held in these areas. We also service a multitude of other industries, some of which include paper and pulp, sugar, brick, chemical, base metals, etc.

### MINERAL INSULATED AND GENERAL PURPOSE THERMOCOUPLES AND RTD'S

| MODEL | DESCRIPTION |
|---|---|
| TC | Type : K, J, T, E, N, R, S, B |
| | Diameters : 1 / 1.5 / 3 / 3.2 / 4 / 4.5 / 4.8 / 6 / 6.35 / 8 / 9.5 / 10.8 / 12.7 mm |
| | Sheath types : Stainless Steel 310, 311, 316, 446 / Inconel 600, 601 / Nimonic / Nicrobell |
| RTD | Types : Pt100 / 150 / 500 / 1000 or Ni100 |
| | Diameters : 3 / 4.8 / 6 / 6.35 / 8 / 9.5 / 10 / 12 / 12.7 mm |
| | Lengths : 10 mm to 30 000 mm (depending on Diameter |
| | Terminal Heads : Die cast aluminum, stainless steel, polypropylene, nylon, cast iron |
| | Terminations : Potting adaptors to standard / custom dimensions, various flylead types |
| | Flylead insulation types : PVC / Teflon / Silicon / Glass or mineral fibre, all with optional SS overbraid |

### THERMOWELLS

| MODEL | DESCRIPTION |
|---|---|
| TW | Types : Solid drilled screwed and flanged, fabricated cold closed threaded and flanged |
| | Diameters : from 6 to 80 mm |
| | Lengths : 10 to 1400 mm solid drilled , up to 6 m fabricated |
| | Materials : Stainless steel 304, 316, 310, 321, 446, 253ma, 353ma, 904 / Sanicro 28 / Inconel 600, 601, 800HT, 825 / Titanium / Teflon |

# Thermocouples and RTD's

## Product Warranty

Each Instrotech product is warranted to be free from defects in material and workmanship under normal use and service, for two years. The warranty period starts on the day of shipment and extends only to the original buyer or end-user customer of a Instrotech authorized reseller. The warranty does not apply to any disposable batteries or fuses. The warranty does not apply to any product, which, in Instrotech's opinion, has been misused, neglected, altered or damaged by accident or by abnormal conditions of operation or handling. Instrotech warrants that the software will operate in accordance with its functional specifications for three months and that it has been properly recorded on non-defective media. Instrotech does not warrant that the software will be error free or operate without any interruption.

The warranty is not transferable and covers only the original purchaser.  To establish original ownership and proof of the date of purchase, please complete and return the registration card accompanying the product.

## Service

Instrotech will, at its discretion, repair at no charge, replace or refund the purchase price of a defective product purchased through an Instrotech  authorized sales outlet and at the applicable international price. Instrotech reserves the right to charge for the importation costs of repair and/or replacement parts if the product purchased in one country is sent for repair elsewhere.

Send the defective product with a description of the problem to the nearest Instrotech  authorized reseller or service centre, postage and insurance prepaid. Instrotech will pay for the return transportation of the product repaired or replaced under warranty.

Before making any non-warranty repair, Instrotech will provide an estimate of the cost and obtain authorization, then invoice you for the repair and return transportation.

THIS WARRANTY ONLY COVERS THE REASONS DETAILED ABOVE.  NO OTHER WARRANTIES, SUCH AS SUITABILITY FOR A PARTICULAR PURPOSE, ARE STATED OR IMPLIED. INSTROTECH IS NOT LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, INCLUDING LOSS OF DATA, ARISING FROM ANY CAUSE OR THEORY.

AUTHORIZED INSTROTECH RESELLERS ARE NOT AUTHORIZED TO CHANGE OR OFFER ANY DIFFERENT WARRANTY ON INSTROTECH'S BEHALF.

# instrotech

## INSTRUMENTATION AND PROCESS CONTROL

A Comtest Group Company

8 Enterprise Close, Linbro Park
Gauteng, 2090, South Africa
PO Box 1208, Linbro Park, 2066

Tel : +27 (0) 11 462 1920
Fax : +27 (0) 11 462 1958

## WWW.INSTROTECH.CO.ZA

**Contact your local distributor**