



## News from M.D. Micro Detectors world

### CX series

The new Area Sensors family

M.D. Micro Detectors announce the completion of its latest new product line: the creation of a totally new range of area sensor - CX series.

### UT2F series

New Ultrasonic Sensors models

M.D. Micro Detectors enlarge its Ultrasonic Sensors Series launching the New M30 ultrasonic sensor models with large front face: UT2F.

The sensor is compact and easy to install in narrow hard to access areas thanks to a plastic body length of only 99 mm and a front face diameter of 40 mm.



Micro Detectors

Italian Sensors Technology





# Editorial

...enjoy the future!

sps ipc drives



Nuremberg, Germany, 26–28 November 2013



We do Believe in it. We Strongly Believe in it. And we Act. Every day we carry out a lot of Actions following a precise Strategic Plan, together with our People full of enthusiasm giving the right drive.

In a Period of Sudden and Deep Changes, we do Believe and Act for being able to continue to carry out any Industrial Activities as well as Technological Development Activities in Italy and Europe at the utmost Competitiveness levels.

Although we live in a System-Country which seems to make every effort to withhold any support and often to disrupt the development process of Industrial Activities, we are working hard for today and tomorrow generations can have the opportunity of performing these activities even here in Italy and in Europe.

We do Believe and Act because we want our Company to grow further as the main reference Point for Industrial Sensor Field. A reference point for Technology, Quality, Performances and Dimensions.

Thanks to a solid technological and industrial competence reached after 42 years of activity and meaningfully revitalized in these last two years, we are able to supply our Customers with an Excellent Service Level under any point of view.

We are implementing a New Products Road Map, something never happened before in the whole Company History.

We can rely on a Team of Specialists, who are Competent and highly Motivated, Proud of "Being M.D." and of what we are doing for us and for others.

Dawn of a New Economic Age, we strongly aim to give our partners a positive message about our Vision of M.D. future and of the Industrial System we are working in, by means of the language of Facts.

We are fighting and will go on to fight for ensuring our Company a Solid, Positive and Lasting Future.

MD News third edition is introducing you about all News regarding us. Our Team is at your complete disposal to show you in details what we are summarizing in the following pages.

Once again we wish to confirm that touching our reality in person, by visiting us, and see what we are able to do and how we could reach certain results is the right way to understand that M.D. Micro Detectors is the best partner for any Companies who believe in Excellence, Efficiency, Quality and Made in Italy concepts.

Chief Executive Officer

# Summary

In this issue of MD news:



M.D. Micro Detectors enlarge its Ultrasonic Sensors Series launching the New M30 ultrasonic sensor models with large front UT2F.

Thanks to a plastic body length of only 99mm and a front face diameter of 40mm, the sensor is compact and easy to install in narrow hard to access areas.

These new models as a direct diffuse

16

function have a working range of up to 6 meters, their blind zone is only 350mm, giving one of the longest sensing ranges available on the Market today.

Double digital output models are available with adjustable hysteresis function, for detection of the maximum and minimum level of liquids and powders, or with a standard window allowing a single output. Analogue output models are also equipped with digital output.

This fork series characterized by their high switching frequency (10 kHz), is available both with infrared light emission and with class 1 LASER emission. Thanks to their high reading precision they are the ideal solution to detect small objects, transparent films or for the edge detection. An ultrasonic fork series, specific for transparent lable reading and "double sheet" applications is also available.

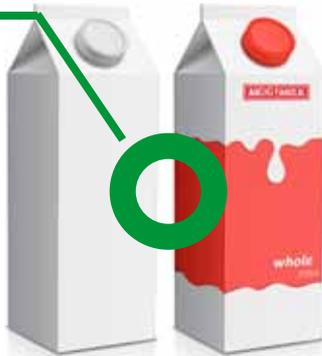


14

6

Strict sanitary conditions need components and devices, which can offer great endurance in the harsh conditions they are subject to, starting from the material used in its manufacture.

M.D. Micro Detectors solutions are designed to last over time; M.D. offers a complete line of products with IP69K mechanical protection according to DIN 40050 which are certified by ECOLAB and DIVERSEY.



26

BX are the first Area Sensors designed to be used in a plants where it needs to clean the products using high pressure water jets (i.e. production lines for FOOD and BEVERAGE Industries). The sensors with a mechanical protection degree of IP69K are able to resist against water jets with pressure of 100 bar and water temperature up to 80°C, making the product extremely sturdy and the suitable solution for application in harsh environments.



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MD news Italian



MD news English



MD news Spanish



MD news French



MD news German



# Marketing Communication

All resources you are looking for!

During last two years our Company has given a strong boost to Marketing Activity.

Both for organization strategy and for operative actions our work has become massive and with highly precise targets.

Thanks to the birth of a team also supporting the other companies belonging to Finmasi Group, we are investing a lot following below strategic guidelines:

- **Marketing Documentation:** increase in quantity and quality level of technical documentation, both for our customers and for our sales force;
- **Marketing Communication:** big efforts never made before to make the New MD known outside, to promote our new products and our Brand.

In addition, we have started an important visit campaign to our facilities, because we believe the most effective way to fully understand what we are realizing is touching our reality practically.

By visiting our factory and our brand new show room, where our technicians can give any practical demonstration, Customers can have a clear idea of our Products features and contents, of our Service level and of our Quality System, while Suppliers can understand completely what we are doing to preserve and improve our industrial structure in Italy.

The most recent tools at our Customers' disposal are the following:

new web site: a portal meant not only for highlighting new products and ensure a better visibility, but also and above all for an access point where any resources or tools for working activities can be easily downloaded. In this way the user can find: constantly updated manuals and catalogues, product data sheets, application notes, application books, advertising material in English, Italian and Spanish, as well as high resolution pictures of our products;

widening of our catalogue book for sales force. Short form catalogue is constantly updated and is available in English, French, Spanish, German and Chinese in order to meet our customer's language as much as possible;

creation of customized displays and panels for our distributors;

realization of new gadgets for 2013 exhibitions: new pens and MD caps, having great success;

birth of MD News. Now at its third edition, MD News is a company magazine summarizing all news concerning MD, our products and their new applications. As a confirmation of our Customer Oriented company, MD News is published in Italian, English, French, Spanish, German and Chinese language.

Our Marketing Service is at our customers' and suppliers' disposal for any new ideas or even exciting challenges.

You can contact us at: [info@microdetectors.com](mailto:info@microdetectors.com)  
Or at: +39 059 420411



New web site: a portal meant not only for highlighting new products and ensure a better visibility, but also and above all for an access point where any resources or tools for working activities can be easily downloaded.

[www.microdetectors.com](http://www.microdetectors.com)



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MD News first edition:



Italian

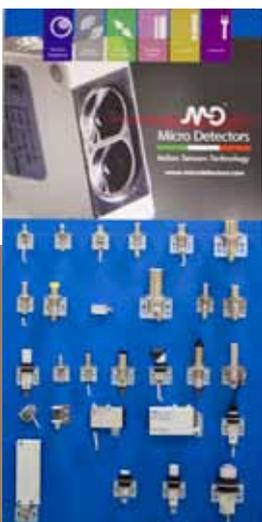
English

MD News second edition:



Italian

English



Creation of customized displays and panels for our distributors



Realization of new gadgets for 2013 exhibitions: new pens and MD caps.



# Special Article Packaging

## Photoelectric and inductive Sensors

Over the last twenty years we have seen a proliferation of thousands of different products and brands. Therefore packaging is becoming more and more important for product identification and differentiation in a marketplace full of competitors.

Design is a strategic feature for any company communication, a crucial element enabling manufacturers to present a product and immediately make it consistent with its brand identity, to supply the customer with all essential information about the product and above all, to capture the user's attention and entice them to buy.

The design of packaging, which has to be really effective in a modern market of customer goods, is becoming more and more difficult because it's a field where the manufacturers have already experienced all possible solutions.

A rational and effective way of packing from a technical and economic point of view is a key factor for product market success. Increased automation and research of the best possible integrated and compact solutions should be considered as this industries target, achievable by means of specific systems to reduce manual activities whilst guaranteeing aesthetic standards, packaging quality and all aspects concerning health and safety particularly for Food and Pharmaceutical industries.

All solutions proposed by M.D. Micro Detectors guarantee quality and reliability during all production phases and processes: starting from primary packaging up to end of line; its wide range of products are able to solve virtually every application requirement in the packaging industry no matter what the environmental conditions are.

### PRIMARY PACKAGING

Strict sanitary conditions need components and devices, which can offer great endurance in the harsh conditions they are subject to, starting from the material used in its manufacture.

M.D. Micro Detectors solutions are designed to last over time; M.D. offers a complete line of products with IP69K mechanical protection according to DIN 40050 which are certified by ECOLAB and DIVERSEY.

During the cleaning processes pressure washers are often used which can supply high pressure jets (100 bar usually) at temperatures up to 80°C. Furthermore aggressive cleaners and disinfectants are also used, such as alkaline and chlorine-based products.

M.D. Micro Detectors full product range is composed of:

	Photoelectric
	IP69K
	FF



area  
download



### Inductives

#### IP69K

PFM e PFM-26



download area

PFK e PFK-26



download area



### Safety

#### Safety light curtains Type 2

LS2\_K & LS2\_H



download area

LS4\_K & LS4\_H



download area

### SECONDARY PACKAGING

Quality, reliability, precision and efficiency through the right components are the key factors to guarantee aesthetic standards, packaging quality as well as all aspects relating to health and safety.

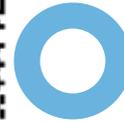
M.D. Micro Detectors is able to offer a full range of solutions:



### Photoelectric

#### Cylindrical

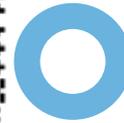
FAL



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#### Cubic

QM



download area

### Optical fibers amplifiers

F1/F2



download area

F6



download area

### Forks

FC7



download area



### Ultrasonic

#### Forks

FC8



download area



**FX fiber amplifier**

Presence detection on conveyor lines.

**FC6 LASER emission fork Sensor**

Cap positioning & detection on flasks.



**Inductives**

**Standard**

**AE**



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**AM**



download area



**AK**



download area



**Cubic**

**IL**



download area



## END OF LINE/PALLETIZATION

The final part of the packaging process is an important logistic factor; innovation and reliability are crucial concepts to guarantee efficiency, reliability and above all operator safety.

M.D. Micro Detectors solutions are:

**AE, AM, AK, AF and IL (see beside):**



Ultrasonic

**M18**

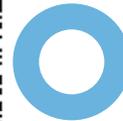
UK1



download area

**M30**

UT1



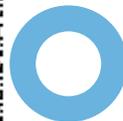
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Area

**Area Sensors**

BX04



download area

BX10



download area

BX80



download area

Safety

**Safety light curtains  
Type 2**

LS2\_K & LS2\_H



download area

LS4\_K & LS4\_H



download area



**QM miniaturized cubic  
Sensor**

Object Presence detection  
for Material Survey





# Metal & Steel industries

## Photoelectric, Ultrasonic, Proximity, Area, Safety

During the last years automation technology has started to expand to a greater extent both in the whole machine control and in the different single phases realization and management. The steel industry represents a real challenge for automation field, because its harsh environments full of oil substances, dust, steam, vibrations and high temperatures need the use of heavy duty devices, reliable for long time and precise.

A steel working plant is composed of winding/unwinding devices, shears, flat levelers, stacking machines, roll or chain conveyors, coil transportation machines, palletizing robots. Each machinery requires different sensors for surveying the various working phases.

The presence of coil is detected by means of long distance optical sensors (RX series granting high immunity to dust, rain, fog) or through ultrasonic sensors M18 (UK series) or M30 (UT series) placed on loading truck of unwinding machine. Ultrasonic sensor with analogue output are able to control the correct belt unwinding operation, by constantly measuring the coil diameter.

Once the metal belt has been unwound, it enters the flat leveler and the shear for cutting operation at desired dimensions. Cubic (RX series) and cylindrical (FA series) optical sensors can detect the correct sheet position. Inductive M18 (AK series) or M30 (AT series) sensors act as limit switches for shear and they ensure immunity to dust, lube oil, grease.

Those inductive sensors are also used to detect speed and rotate direction of reels, brushes, rolls and for correct positioning of stacking machine pliers thus enabling a correct sheet piling. Once the sheets are piled, they can be prepared for shipment.

The conveyors use ultrasonic sensors or optical ones for detecting the presence of sheets and start





working areas accidentally and to keep all possible detachable crosses inside the machine.

Safety optical sensors, instead, are placed at any access point for material to be machined: single beam (SH or TH series) or multi beam (2 or 3 optics, SBA or LS series) light curtains for body detection, limb detection/protection light curtains (40-50-90mm resolution, LS series), hand (30mm resolution, LS series) and finger (14mm resolution, LS series) detection light curtains.



the dragging engines. The sheets are then closed together by straps, carried by palletizing robot and got available for shipment.

For hot machining BX series area sensor with external metal protection is the best solution. That protection is also equipped with a cooling air input: by properly adjusting the airflow it is possible to work at up to 100°C temperature environments. The airflow coming out from metal body allows a



constant cleaning of sensor optics and prevents accumulation of dust and particles on optical head. For an easier sensor cleaning, BX series products are also available with glass optics, allowing to use detergents without any risk of matting.

Due to the typical machining activities, this working environment may be subject to dangers against which operating people must be protected. Cases and metal nets are often found therein, in order both to avoid the operator can have access to the





Photoelectric  
Cylindrical  
FA



download area

Cubic  
RX



download area



Ultrasonic  
M18  
UK1



download area

M30  
UT1



download area



Inductive  
Standard  
AK



download area

AT



download area



Area  
Area Sensors  
BX04



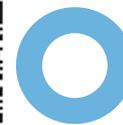
download area

BX10



download area

BX80



download area

## Companies of the Group: Metalsider S.p.A.



*Metalsider S.p.A., established in 1961, is a leading company in the first transformation and sale of hot-rolled steel flat products. It is specialised in the cutting of strips, in the custom-made flattening of steel plates obtained from black and pickled coils in carbon steel, and also in the flattening of quarto plates.*



*Metalsider S.p.A.  
Via Piomboni, 3 - 48122 Ravenna - Italia  
[www.metalsider.it](http://www.metalsider.it)*

### Safety

#### Photocells Type 2 & Type 4

SH



download  
area



TH



download  
area



#### Safety light curtains Type 2

LS2



download  
area



SBA



download  
area



#### Safety light curtains Type 4

LS4



download  
area



## Sidermed S.p.A.



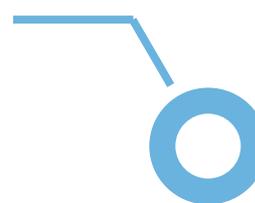
*Sidermed S.p.A. is a service centre for steel products. In Italy, it is a leading company in the manufacturing of steel plates, strips and custom-made cutting of straps obtained from pickled, cold-rolled, zinc-plated and aluminized coils in carbon steel, Aluzinc. painted, pre-painted and plastified.*



*Sidermed S.p.A.  
Via dell'Artigianato, 25 - Mordano di Imola (Bologna)  
Italia  
[www.sidermed.it](http://www.sidermed.it)*



download  
area



# Let's focus on forks!

## Photoelectric and Ultrasonic

M.D. Micro Detectors presents the new forks series, the best solution for packaging, labelling, printing applications and, generally, for automatic machine field.

The new series we are introducing are the following:

**FC5:** with no adjusting system, it allows the "plug and play" application, making the installation much easier. The wide range includes forks from 50 mm up to 120 mm wide and from 60 mm up to 120 mm thick, with 4 kHz switching frequency, covering a large range of applications with no starting set up.

**FC6:** characterized by their high switching frequency (10 kHz), they are available both with infrared light emission and with class 1 LASER emission. Thanks to their LightON and DarkON modes selectable by button, the forks allow to detect small objects with dimensions of about 0.2 mm for the infrared light emission version, and until 0.05 mm for the red LASER emission version. Moreover, always in the same family there are other available versions working from 30 mm up to 120 mm wide and from 42 mm up to 59 mm thick.

It is possible to configure the product both in NPN and in PNP version, LightON and DarkON modes by button, which makes the product particularly flexible to the specific Customer needs, simplifying the use, and reducing the number of part numbers.

**FC7:** specific fork series for reading/counting labels, with high switching frequency (10 kHz). Thanks to its thin form, it could be installed on every part of the machine, simplifying the installation also in small field application. The remote Tech-in allows to set the sensor easily, also during the use, while the labels are running. Available models with NPN or PNP output, NO/NC; moreover the REMOTE function allows to configure the product through a push-button.

**FC8:** an ultrasonic forks series, specific for transparent label reading, with switching frequency until 1.5 kHz. Simple and accurate adjustment by +/- buttons, also during the use, while the labels are running. Available with NPN or PNP output, NO/NC.

## industries and applications

production processes and packaging lines  
 beverage Industry  
 detection of small pieces, objects, holes, and marks  
 positioning Robotic Arms  
 control of micro assembly  
 edge Detection  
 packaging  
 labelling, paper and printing machines  
 detection of double labels, or labels either on transparent strip or coloured one



Photoelectric Sensors

Ultrasonic

# Forks



	FC5	FC6I	FC6L	FC7	FC8	
sensing slot width	50, 80, 120 mm	30, 50, 80, 120 mm	30, 50, 80, 120 mm	3 mm	3 mm	
sensing slot depth	60, 120 mm	42, 59 mm	42, 59 mm	42 mm	69 mm	
minimum object detectable	0.8 mm	0.2 mm	0.05 mm	—	—	
emission	red	infrared	laser	infrared	ultrasonic	
LASER	—	—	(class 1)	—	—	
ultrasonic	—	—	—	—	•	
switching frequency	4 kHz	10 kHz	10 kHz	10 kHz	1,500 Hz	
power supply	Vdc	•	•	•	•	
	Vac	—	—	—	—	
output type	NPN - NO	•	—	—	—	
	NPN - NC	•	—	—	—	
	PNP - NO	•	—	—	—	
	PNP - NC	•	—	—	—	
	NPN - NO / NC	—	—	—	•	•
	PNP - NO / NC	—	—	—	•	•
	NPN/PNP - NO/NC	—	•	•	—	—
temperature range	-10°C...+60°C	-20°C...+60°C	-20°C...+50°C	-20°C...+60°C	+5°C...+55°C	
protection degree	IP67	IP65	IP65	IP65	IP65	
housing material	painted aluminium	painted aluminium	painted aluminium	thermoplastic (PA12)	painted aluminium	
output	3 wires M8 plug	•	—	—	•	
	4 wires M8 plug	—	•	•	•	
ATEX	—	—	—	—	—	
other certifications	UL CE	UL US LISTED CE	UL US LISTED CE	UL CE	UL US LISTED CE	

for the portfolio completion:



FC3

Dual beams photoelectric slot sensor. TRIAC output. Light on/Dark selectable by polarity inversion.



FC4

Four beams photoelectric fork sensor for belt tracking control. Double static outputs + alarm contact.



Available  
1<sup>st</sup> quarter  
2014

# New UT2F

## “Large Front” Ultrasonic Sensor

On the occasion of SPS DRIVE Exhibition in Nuremberg, M.D. Micro Detectors is pleased to announce its new M30 ultrasonic sensor models with extended detection range thanks to a larger front face: UT2F.

The UT2F sensor models, which shape are being introduced for the first time in the M.D. products portfolio, as a direct diffuse function have a working range of up to 6 meters.

The blind zone of this product is only 350mm, giving one of the longest sensing ranges available on the Market today.

The UT2F range is highlighted by its full range of versions, the sole on the Market, both from the mechanical aspect (pre-cabled and plug connector exits available) and its output and logic versions (PNP, NPN and analogue outputs).

Double digital output models are equipped with adjustable hysteresis function, for detection of the maximum and minimum level of liquids and powders, or with a standard window allowing a single output.

Analogue output models are also equipped with digital output, a feature that allows the user to reduce costs by decreasing number of sensor versions needed.

Thanks to a plastic body length of only 99mm and a front face diameter of 40mm, the sensor is compact and easy to install in narrow hard to access areas.

The low operating voltage of 12Vdc allows the sensors to be powered from a vehicle battery making it ideal for use in applications such as agricultural machinery.

The two visible LEDs, which are clearly seen through the transparent plug or cable exit, permit an easy setup of the sensors.

The green LED, which provides echo return information, allows the user to easily align the sensor with its target, which is a critical function considering the long operating distances this device can reach.

The orange LED provides information about output state, adjustment procedure and function options.

The teach-in button is a multifunction one: it enables selection of the working range thus improving resolution and enabling slope inversion

if using the analogue output. The button is also used to change the digital output state; in addition, for double digital output models, it allows the operator to select the correct function.

All UT2F series ultrasonic sensors are completely filled with resin to grant IP67 protection degree parameters, thus allowing the use in applications subject to vibration and moisture.

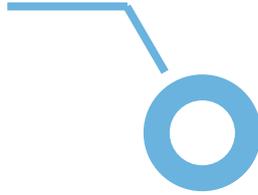
UT2F models are cULus certified.

### industries and applications

- earth-moving and construction equipment
- logistic
- food industry
- beverage industry
- wood industry
- glass industry
- siderurgic industry



download  
area



Ultrasonic

**M30**

**UT2F**

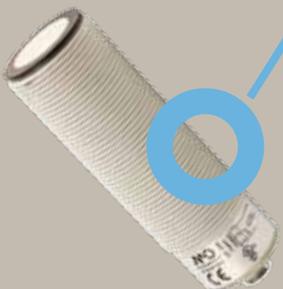
New  
series



dimensions	350...6,000 mm	
direct diffuse	—	
retroreflective	—	
through beam	●	
power supply	Vdc	—
	Vac	—
output type	PNP - NO e NC	—
	NPN - NO e NC	—
	2 x PNP hysteresis function 2 x NPN hysteresis function	Teach-in button
	PNP - NO / NC NPN - NO / NC	—
	0...10 V	—
	4...20 mA	—
	2 x PNP - NO / NC 2 x NPN - NO / NC	Teach-in button
	1 x PNP - NO / NC + 1x 0...10 V 1 x NPN - NO / NC + 1x 0...10 V	Teach-in button
	1 x PNP - NO / NC + 4...20 mA 1 x NPN - NO / NC + 4...20 mA	-20°C...+70°C
temperature range	-20°C...+70°C	
protection degree	IP67	
housing material	epoxy glass resin	
front-end material	●	
output	cable	●
	M12 plug	—
	M12 pig-tail	—
ATEX	—	
other certifications	 	

for the portfolio completion:

**UT1B**



UT1B Family sensors, working from 250 mm up to 3.500 mm, thanks to the temperature compensation throughout the working range (-20°C...+70°C), ensure the sensor reading stability.  
The sensor completely filled with resin, thanks to its IP67 protection degree, fits for outdoor applications.



Available  
1<sup>st</sup> quarter  
2014

# New metal UK1 & UK6 Sensors

## Metal Ultrasonic Sensors

On the occasion of SPS DRIVE Exhibition in Nurnberg, M.D. Micro Detectors is glad to announce the launch of new ultrasonic sensor models - metal version - completing our M18 range of both standard (UK18) and short body (UK6) series.

The new metal versions – UK1 series – are available with 3 different working distances: UK1A models with a maximum 400mm working distance, UK1C models with a maximum 900mm working distance and UK1D models with a maximum 1500mm working distance, usually reached by M30 sensors. Double digital output models – UK1 series – are equipped both with adjustable hysteresis function, fit for detection of maximum and minimum level of liquid and dust, and with standard window allowing a single output function. Orange LED, which is clearly visible through the transparent plug or cable exit, gives important information about output state, adjustment procedure and selected function. The teach-in button is a multifunction one: it enables selection of working range thus improving resolution and enabling slope inversion in case of analogue output, as well as to change the digital output state; in addition, for double digital output models, it allows the operator to choose between two different functions.

UK6 series offers two new models with metal body, which are the UK6A with a 300mm maximum working distance and UK6C with a 600mm maximum working distance. The short body and the adjustment by multifunction teach-in cable make these UK6 series sensors particularly suitable for any application where space is limited. The yellow LED together with the clearly visible green LED, make the sensors easy to align with target to be detected thanks to the transparent plug and cable exit. All UK1 and UK6 series models are completely filled with resin -IP67 protection degree-, thus allowing their use in applications subject to vibration or wash downs.

Thanks to its constant development of ultrasonic technology and the consequent increase in the product portfolio, M.D. Micro Detectors is now a market leader in terms of the depth of its ultrasonic product range and technological “know how”.

### industries and applications

- earth-moving and construction equipment
- logistic
- food industry
- beverage industry
- wood industry
- glass industry
- siderurgic industry



Metal Ultrasonic Sensors

M18 with Teach-In button

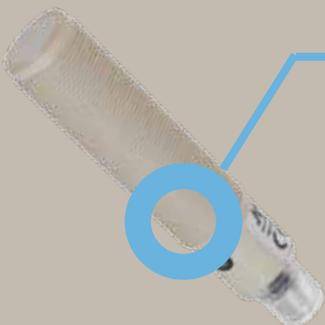
M18 short housing

UK1A New series UK1C New series UK1D New series UK6A New series UK6C New series



dimensions		M18	M18	M18	M18	M18
direct diffuse		50...400 mm	100...900 mm	200...1,500 mm	40...300 mm	120...600 mm
retroreflective		—	—	—	—	—
through beam		—	—	—	—	—
power supply	Vdc	•	•	•	•	•
	Vac	—	—	—	—	—
output type	PNP - NO e NC	—	—	—	—	—
	NPN - NO e NC	—	—	—	—	—
	2 x PNP hysteresis function 2 x NPN hysteresis function	Teach-in button	Teach-in button	Teach-in button	—	—
	PNP - NO / NC NPN - NO / NC	—	—	—	Teach-in cable	Teach-in cable
	0...10 V	—	—	—	Teach-in cable	Teach-in cable
	4...20 mA	—	—	—	Teach-in cable	Teach-in cable
	2 x PNP - NO / NC 2 x NPN - NO / NC	—	—	—	—	—
	1 x PNP - NO / NC + 1x 0...10 V 1 x NPN - NO / NC + 1x 0...10 V	Teach-in button	Teach-in button	Teach-in button	—	—
	1 x PNP - NO / NC + 4...20 mA 1 x NPN - NO / NC + 4...20 mA	Teach-in button	Teach-in button	Teach-in button	—	—
temperature range		-20°C...+60°C	-20°C...+60°C	-20°C...+60°C	-20°C...+60°C	-20°C...+60°C
protection degree		IP67	IP67	IP67	IP67	IP67
housing material		stainless steel AISI 316L				
front-end material		epoxy glass resin				
output	cable	•	•	•	•	•
	M12 plug	•	•	•	•	•
	M12 pig-tail	—	—	—	—	—
ATEX		—	—	—	—	—
other certifications						

for the portfolio completion:



UK1 plastic housing



UK6 plastic housing





# Ultrasonic Sensors for asphalt paving

## Ultrasonic technology serving communities.

### Short description

On an asphalt pavers ultrasonic sensor technology proves to be the best solution.

### Task

The Company history started in the 30's of XX century in Northern Italy, when Italy felt the need of a developing of modern streets network. The Company has grown rapidly, developing a wide range of road machines and becoming a great industrial complex.

Few years ago the Company was taken over by a US multinational company, one of the worldwide leader in manufacturing machines for road maintenance and construction.

MD Customer was established in the 70's of XX century and operates as system integrators for the electronic equipments in the machinery used in agriculture, building and roadworks.

The Company operates with an internal engineering department, capable of elaborating and producing cabling, control panels and mechatronic components.

### Implementation and Customer benefit

The asphalt pavers is equipped with UK1F/E1-0A1J ultrasonic sensor from M.D. Micro Detectors to measure the level of asphalt on the road.

The sensor works in direct diffuse mode, with analog voltage output (0-10V) and a maximum working distance of 1,600 mm.

Thanks to this high distance it is possible to fix the sensor away from road to avoid deviation of ultrasonic sound due to heat of the target.

Through teach-in button, it is possible to select a window within the working range to optimize the resolution.

The sensor has a M18 housing, so UK1F product is mechanically a compact solution respect an M30

diameter (typically, the working distance of 1,600 mm is reached from a M30 diameter).

In this way M.D. Micro Detectors can offer a more cheaper solution respect to our Competitor.

The voltage supply of the sensor is 12Vdc so, the battery of machinery is suitable to supply the sensor without an additional adaptor.

The sensor is full filled of resin so it stands well the vibration of asphalt pavers during the work.

The cable exit is the better solution respect to connector one to avoid connector loosening caused by vibration of machinery.

UK1F/E1-0A1J has an IP67 protection degree.

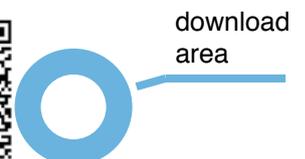
The temperature compensation guarantees a stable detection although the working temperature changes within -20°C up to +70°C.

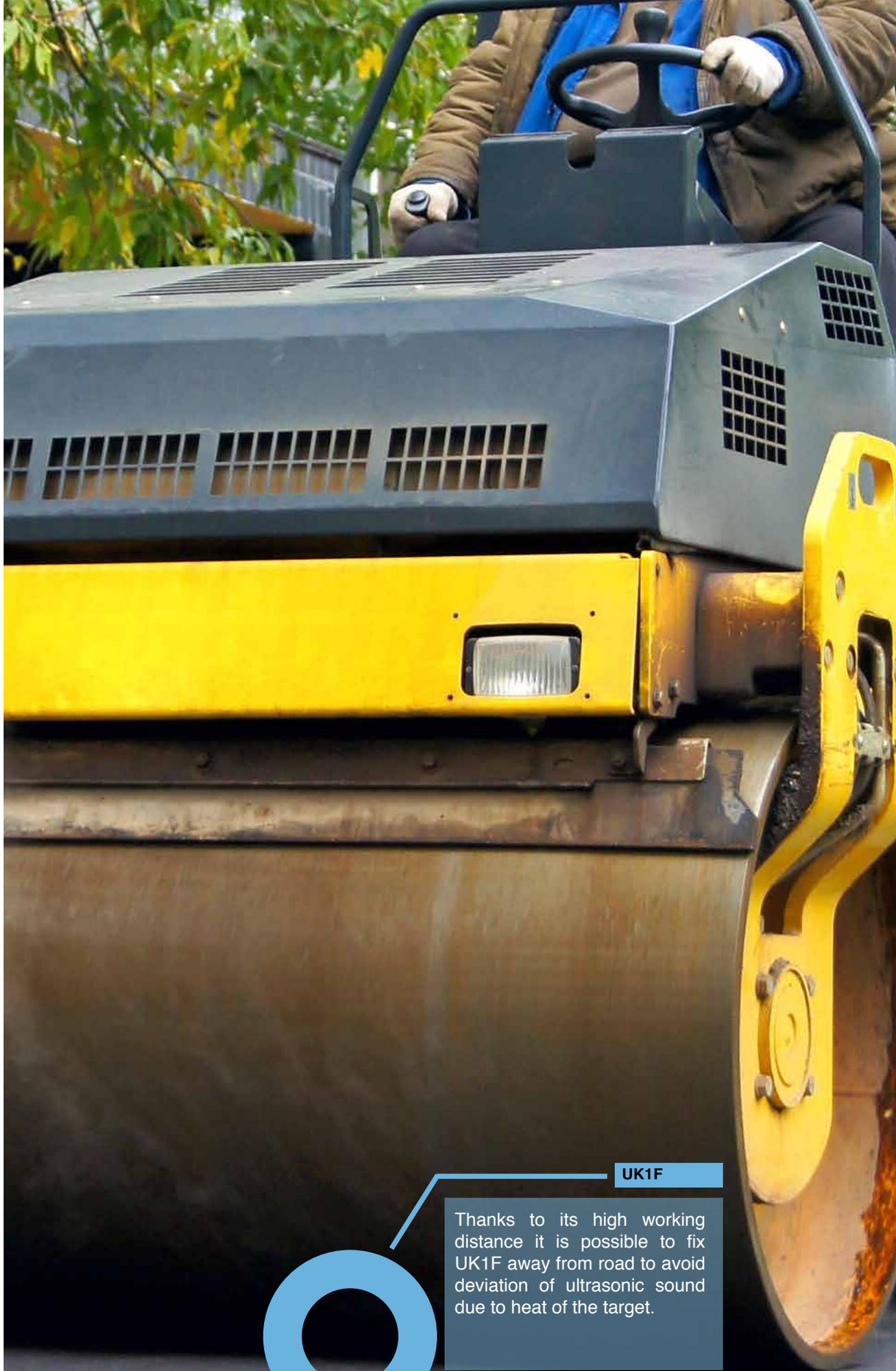


Ultrasonic

M18

UK1





#### UK1F

Thanks to its high working distance it is possible to fix UK1F away from road to avoid deviation of ultrasonic sound due to heat of the target.





download area



# Inductive miniaturized sensors

## Proximity Sensors

M.D. Micro Detectors, is glad to inform you that always in the continuous development and widening of Proxy family range, introduces the new miniaturized inductive sensors:

- AC1 series = Ø4
- AD1 series = M5
- AHS series = Ø6,5
- AES series = M8

Through these new models introduction, today, the M.D. Micro Detectors proxy product portfolio is settled as one of the most competitive and complete of the Industrial automation market.

The new miniaturized inductive sensors are now available in the shielded version, both with standard detecting range ( $S_n = 0,8$  for AC1/AD1 models and  $S_n = 1,5$  mm for AHS/AES models) and with long distance one ( $S_n = 1,5$  mm for AC1/AD1 models and  $S_n = 2$  mm for AHS/AES models).

All models are supplied with Steel Housing, to be the suitable solution for all harsh application field; the extremely small dimension and high switching frequency make these models particularly precise and repeatitive during the detection.

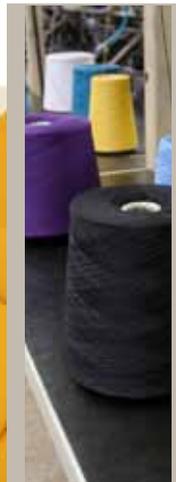
Available the NPN or PNP outputs, with NO and NC logic, with 2 m cable or M8 plug; all models are available with CE and UL certification.

Main features:

- Extremely reduced dimensions
- Cable version or M8 plug
- Steel Housing
- IP67 protection degree
- UL Certification

### Industries and applications

- plastics industry
- industrial robots
- wood industry
- texile Industry
- automatic machines
- packaging industry
- electronic components production
- printing industry
- postal sorting

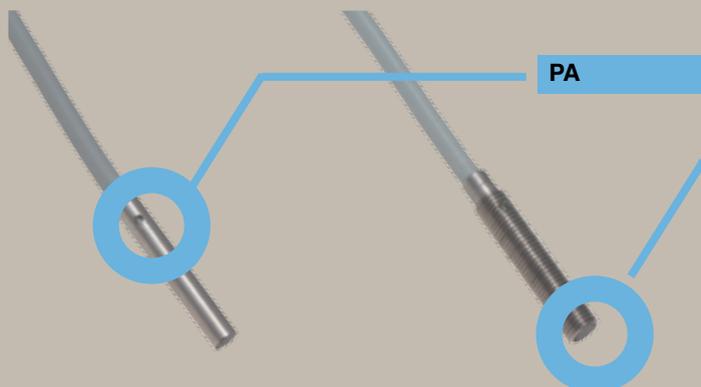


## Miniaturized



dimensions		ø 4	M5	ø 6,5	M8
standard shielded		0.8 mm	0.8 mm	1.5 mm	1.5 mm
standard unshielded		—	—	—	—
long distance shielded		1.5 mm	1.5 mm	2 mm	2 mm
long distance unshielded		—	—	—	—
standard housing		—	—	—	—
short housing		—	—	—	—
miniaturized housing		•	•	•	•
supply voltage	Vdc	•	•	•	•
	Vac	—	—	—	—
output type	NPN - NO	•	•	•	•
	NPN - NC	•	•	•	•
	PNP - NO	•	•	•	•
	PNP - NC	•	•	•	•
	PNP - NO + NC	—	—	—	—
	NPN - NO + NC	—	—	—	—
	DECOUT®	—	—	—	—
	SCR	—	—	—	—
	0...10 V	—	—	—	—
4...20 mA	—	—	—	—	
temperature range		-25°C...+70°C	-25°C...+70°C	-25°C...+70°C	-25°C...+70°C
protection degree		IP67	IP67	IP67	IP67
housing material		stainless steel	stainless steel	stainless steel	stainless steel
active head material		PBT	PBT	PBT	PBT
output	cable	•	•	•	•
	M8 plug	•	•	•	•
	M12 plug	—	—	—	—
ATEX		—	—	—	—
other certifications					

for the portfolio completion:



Extremely reduced dimensions: Ø 3 mm x 22 mm length. Supply voltage 10 ÷ 30 Vdc. LED status indicator. IP67 housing protection. Complete protection against electrical damages.

Extremely reduced dimensions: M4 x 22 mm length. Supply voltage 10 ÷ 30 Vdc. LED status indicator. IP67 housing protection. Complete protection against electrical damages.



Available  
1<sup>st</sup> quarter  
2014

# The new M.D. Area Sensors

## The new market standard!

M.D. Micro Detectors is pleased to announce the completion of its latest new productline: the creation of a totally new range of area sensors – CX series.

CX series is composed of two families: CX1 series with basic functions and CX2 with advanced features.

The 20x35 mm aluminum profile makes the new M.D. area sensor family one of the smallest devices available on the market; furthermore this product is easy to install, thanks to the mounting groove running down the rear of the sensor housing all the way down to the pig-tail connection.

No dead zone at either the top or bottom of the CX series allows exploitation of the whole front face for detection, thus reducing typical machine mounting space issues experienced with other similar competitor products.

CX1 series models allow detection of up to 5 mm objects, versions with up to 480 mm controlled height and 3 m working distance are available. CX1 series is supplied with optical synchronization, making the installation and connection phases easier; resolution is adjustable by means of a

separate external module via TRIMMER, which can be disconnected once the adjustment has been completed and used for other area sensors, resulting in an overall cost saving.

The full range of functions and outputs of CX2 series permits this family to rationalize the number of available models and make this product extremely flexible and suitable for any customers' needs. Just two versions can satisfy all output logics, both digital and analogue: the double digital output – 0-10 and 4-20 mA – model, which is invertible and the double analogue with PNP and NPN NO/NC output. The function selection is obtained by means of only three wires thus avoiding any complex selection procedures and any tampering risks after installation.

CX2 series products not only enable object detection in an area measuring up to 980 mm height and a up to 6 m working distance but they also can give the target dimension thanks to the analogue output proportional to the number of blocked beams. Care of manufacturing details, which M.D. is putting into the development of all new products, is constantly focused on the Customer's application solutions and specific needs: a blanking function is available to adjust the area sensor so that it can ignore permanent obstructions between any beams due

### Industries and applications

- automated warehouse
- package Industry
- conveyors



to mounting constraints.

If this function is used, the analogue outputs will be rescaled according to the number of free optics and the digital outputs enable detection by means of parallel beams, according to the sensor pitch: 5 mm, 10 mm and 20 mm.

Three LEDs positioned at both the top and bottom of the area sensor which are clearly visible through the front face, enables an easy diagnosis of the output status making the installation even easier. Ease of use and a great functional flexibility are the key factors of these new Area Sensor families and the "Made in Italy" by M.D. Micro Detectors, which is synonymous for quality and reliability. CX1 and CX2 series are cULus certified!



		Area Sensors	
		Area Sensors	
		CX1	CX2
		New series	New series
dimensions		20x35 mm	20x35 mm
sensing distance		up to 3 m	up to 6 m
controlled area height		from 160 mm up to 480 mm	from 160 mm up to 960 mm
minimum detectable object		up to ø 1 mm	up to ø 1 mm
number of optics		from 33 up to 97	from 33 up to 97
optics step		5 mm	5 - 10 - 20 mm
power supply	Vdc	●	●
	Vac	—	—
output type	NPN + PNP - NO	—	—
	NPN + PNP - NC	—	—
	NPN - NO / NC	—	—
	PNP - NO / NC	—	—
	PNP - NO	—	—
	NPN - NO	—	—
	PNP - NC	—	—
	NPN - NC	—	—
	NPN + 4...20 mA + 0...10V	—	—
	optoisolated, 20 mA	—	—
parallels	—	—	
temperature range		-25°C...+55°C	-25°C...+55°C
protection degree		IP67	IP67
housing material		aluminium	aluminium
head material		PMMA	PMMA
output	cable	—	—
	M12 plug	—	—
	MOLEX 22-05-7048	—	—
ATEX		—	—
other certifications		CE	CE



Available  
1<sup>st</sup> quarter  
2014

# IP69K Area Sensors

More and more reliable!

M.D. Micro Detectors, with reference to the completion project of the high performance products range, is pleased to announce the market introduction of the new BX models, Area Sensor with a mechanical protection degree of IP69K according the DIN 40050.



These models are the first Area Sensors designed to be used in a plants where it needs to clean the products using high pressure water jets (i.e. production lines for FOOD and BEVERAGE Industries), allowing to eliminate the use of the typical protecting accessory such us PMMA protective tubes.

The sensors are able to resist against water jets with pressure of 100 bar and water temperature up to 80°C, making the product extremely sturdy and the suitable solution for application in harsh environments.

These Area Sensors are able to guarantee a perfect waterproof due to the full resin body reinforced with polycarbonate material and the stainless steel AISI 303 protective caps (the caps protect the adjustment trimmer on the emitter unit and the Light ON/Dark ON selector on the receiver

The laser marking allows to perform a perfect cleaning.

The BX04, BX10 e BX80 series are able to detect small object up to 2mm of dimension, with a controlled height of 90mm and reaching up to 6 meters of operating distance. Additional quality certificates are confirmed by the Fraunhofer Institut Chemische Technologie and for the cULus approval.

## Industries and applications

siderurgic Industry  
logistic  
Harsh Environment  
Food & Beverage  
Pharmaceutical Industry



download  
area



## Area Sensors

# Area Sensors

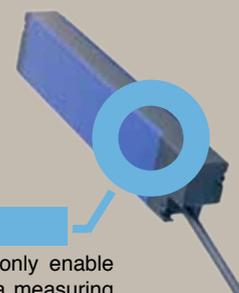
		BX04	BX10	BX80
				
dimensions		20x44x120 mm	20x44x120 mm	20x44x120 mm
sensing distance		up to 6 m	up to 6 m	up to 2,5 m
controlled area height		90 mm	90 mm	70 mm
minimum detectable object		up to ø 15 mm	up to ø 5 mm	up to ø 2 mm
number of optics		4	10	12
optics step		30 mm	10 mm	6 mm
power supply	Vdc	●	●	●
	Vac	—	—	—
output type	NPN + PNP - NO	●	●	—
	NPN + PNP - NC	●	●	—
	NPN - NO / NC	—	—	●
	PNP - NO / NC	—	—	●
	PNP - NO	—	—	—
	NPN - NO	—	—	—
	PNP - NC	—	—	—
	NPN - NC	—	—	—
	NPN + 4...20 mA + 0...10V	—	—	—
	optoisolated, 20 mA	—	—	—
	parallels	—	—	—
temperature range		0°C...+80°C	0°C...+80°C	0°C...+80°C
protection degree		IP69K	IP69K	IP69K
housing material		Valox	Valox	Valox
head material		PC	PC	PC
output	cable	—	—	—
	M12 plug	●	●	●
	MOLEX 22-05-7048	—	—	—
ATEX		II3GD	II2GD, II3GD	II3GD
other certifications				

for the portfolio completion:



### CX1

CX1 series models allow detection of up to 5 mm objects, versions with up to 480 mm controlled height and 3 m working distance are available.



### CX2

CX2 series products not only enable object detection in an area measuring up to 980 mm height and a up to 6 m working distance but they also can give the target dimension thanks to the analogue output proportional to the number of blocked beams.



# M.D. History

## Interview with Mauro Del Monte

A Company History is made of crucial events, ideas, products and passion for a job and for its challenges. A Company History is inextricably linked to the history of the people who give their contribution to its growth. There are people who are identified by and identify themselves with a Company.

Saying M.D. Micro Detectors also means saying Mauro Del Monte: a milestone of this Company and of its History.

We met Mauro Del Monte in his laboratory, which is a forge of ideas and products where he has expressed his never ending and dynamic creativity for decades.

Mauro is 62 years old and he has been part of the Company since its creation: in 1971 he became the first employee. Starting in a garage this Company through development has grown and is still growing today.

Hundreds of products and tools, designed and developed during the last 42 years, speak for him, all of them marked with Quality, Simplicity, Efficiency and Lasting features.

### **Mauro Del Monte: where did your passion for electronics come from?**

My Love for electronics started when I was very young, when I found a thermionic tube left alone in a courtyard where I spent most of my childhood. I was 6 years old at that time and that object stirred up an extraordinary interest inside of me, just imagine once I had opened it! I got struck and soon after it became true Love and then a never ending Passion still lasting today.

As a boy the story goes on with my attraction for scientific magazines: I was eating up any book about Physics or famous scientists lives.

At the middle school I involved my Physics teacher in carrying out frequent experiments in our class room regarding phone and radio (such as Meucci and Marconi).

I started my high school at Enrico Fermi Technical Institute in Modena and in 1969 I graduated as Industrial Expert with the maximum results. The "sacred fire" of electronics pushed me to look for technical challenges to compete with in my workplace instead of in the University.

### **As you have been in the Company from the start, could you tell us how M.D. Micro Detectors was born?**

Some months after my Diploma achievement, I went to my school teacher at Fermi Institute, Paolo Iori, who was motivated by an extraordinary passion for technology and electronics like me. Iori was also carrying out his craft in a company called DI-ELL (that is Didactic Electronic) in Modena which he established together with his wife, Mrs. Laura Melotti. This company was manufacturing teaching panels for schools but also produced electronic devices for local companies.



*"Do the job you like and you won't be working all life long"*

**Mauro Del Monte**  
Manager for Innovation and Patents  
M.D. Micro Detectors

That garage, consisting of two small rooms – a laboratory and an office – became a place where inventiveness and competence were able to produce effective solutions for the newborn Ceramic Industry, at that time subject to a fast growth thus strongly needing process streamlining. Then there was a great demand of innovative and reliable sensors, always connected to automation development. The Ceramic Industry was using a high number of mechanical sensors with levers to detect the presence of tiles: our challenge was studying and realizing optical proximity sensors to be used in those applications. At that time the photoelectric sensors consisted of an emitter with an incandescent lamp and a receiver made with a cadmium sulfide photo-resistor working together with their amplifier. Some capacitive and inductive proximity sensors, instead, were already existing and of course used in other applications. GE had just started to manufacture the first infrared LEDs in TO18 housing and there were already Philips photo-transistors available on the market. In a very short time we were able to develop a photo-sensor with features still representing today's fundamental references, that are: diffuse reflex detection, 0..100 mm sensing distance, protected static PNP and NPN output as of 100mA, high immunity to ambient light, good repeatability, very long life and exceptional mechanical strength. The father sensor of our production ranges was born in those very days: LS2 series, 20x40x80 mm dimension, chrome-plated brass housing (obtained by a brass tube), 20x40 front head in PMMA, equipped with trimmer, fixing carried out by means of 2pcs M4 nuts and filled with epoxy resin. An Indestructible Rock! That product was a clamorous success, giving M.D. the right push to expand. A second important step in 1980 was the realization of a photo-sensor model with an M18 housing. It was a beautiful photoelectric sensor in a shape already used as standard for inductive and capacitive sensors. It was the first M18 cylindrical shape photoelectric sensor and was a striking Market success.

### **Which is your task today?**

I retired in 2007, but I was not able to leave my job; therefore I am still cooperating with M.D. trying to transfer to our young talents my long experience as much as possible and to give my support for any special project development. In particular in this period I am following two important projects: one refers to the realization of ultrasonic transducers and the other is the re-design of our area sensor series with a modern measuring light curtain line.

### **Which are the products you are particularly proud of?**

In addition to those previously described, my cooperation with Mr. Iori to develop the first scanner photoelectric sensor at a solid state and the birth of first "miniaturized" M18 standard sensor gave me the greatest satisfaction. Great satisfaction also came from AX area sensors and recently from BX series; since their first launch on the market they have represented a reference standard for a lot of application fields so far.

Furthermore we also realized custom products, such as the barcode reader for Tassimo coffee and infusion machine, which was one of the most successful, as well as lot of tools, such as the trimming laser. In general my job has always been aiming to exploit the power of Simplicity and full Efficiency at the utmost in all design aspects.

### **What do you like most of today M.D.?**

The People and the Organization. This Company has developed starting from a local and small industry managed by the Iori family, now becoming a modern industrial and efficient organization guided by the President, Mr. Marcello Masi, and the Managing Director, Mr. Giacomo Villano. M.D. has arranged competent managers and engineers who are following its tradition and realize sensors, which can face competition in terms of Functionality, Quality and Cost. M.D. keeps on spreading its sensors on the market slowly but constantly growing, directly and indirectly.

### **How is technology developing in this field, according to your opinion? Where are we going to?**

I would like to deal with this issue in general. I can only list the most known guidelines, really similar to those found in any organization which development is in process: increase in function complexity, increase in energetic efficiency, utmost miniaturization (up to nanotechnology), extension of connectivity (at all levels) and close integration among electronics, optics, information technology, biochemistry till exploitation of deepest physical events of matter (quantum effects).

In particular I think we always aim to realize our own dream to have a complete control of the environment we are living in and of our body. Sensors can be seen as our first interface to realize this dream.

### **What do you think M.D. is excelling in and for which reasons should people buy M.D. products?**

M.D. sensors have always excelled in Quality and Strength. Our products might be unearthed by an archaeologist in the next millennium and found still working. The technical support has also been our pride since the beginning: our customers always find immediate answers to their application problems.

### **Which kind of advice can Mauro Del Monte give to young people wishing to approach the sensor design world?**

Do you know the saying "Do the job you like and you won't be working all lifelong"? Nowadays, in a period of economic crisis, it may sound as a joke, but I believe that doing all our best is necessary to follow our own passions and develop our innate skills.

If you are attracted by the technology world, this is a field where physics is strictly linked to electronics and be sure it will further develop and become more and more important.



# FinMasi Group

## News from the Group

M.D. Micro Detectors S.p.A. is the head company of Finmasi Group, composed of different organisations working in the Sensor Industry. Finmasi Group is a Private Holding entirely owned by Marcello Masi and his sons.

The first company of this Group was established fifty-two years ago: since then the goal has always been to achieve constant growth whilst maintaining Entrepreneurial, Development and Profitability values.

Finmasi Group is composed of eleven companies operating in the Steel Industry (Service Centres), in the Electronics Field (sensors and printed circuit boards) and in the Service Sector (Hotels and Logistics).

**Steel Industry** the following companies are operating:

- Metalsider S.p.A.: established in 1961, is the first company of this Group and it is a Service Centre for Steel Products such as hot-rolled flat and stripped steel products;
- Sidermed S.p.A.: established in 1984, is a Service Center for Steel Products such as Steel Plates, both Cold- and Hot-Rolled, Plated as well as Pre-painted products.

**Electronic Field** the following companies are operating:

-Sensor Division:

- M.D. Micro Detectors S.p.A.: established in 1971, is a specialist in the manufacture of sensors for industrial automation;
- Micro Detectors Ibérica S.A.U.: established in 1991, manages the distribution and promotion in Spain of M.D. Micro Detectors products and solutions;
- M.D. Micro Detectors (Tianjin) Co., LTD.: established in 2012 manages the distribution and promotion in China of M.D. Micro Detectors products as well as the production of coils for inductive sensors.



*"We constantly feed the Ambition, the Willing of Doing Right and the Aim at Perfection together with our team"*

**Marcello Masi**  
President and Founder of Finmasi Group

### Printed Circuit Board Division:

- Cistelaier S.p.A.: born in 1998 (merging two industrial entities), produces printed circuit boards, excelling in high technology products and prototype manufacture with very short lead times;
- Techci Rhône-Alpes SA: established in 1983, is specialist in high technology PCB manufacture;
- Cistec Technology (Beijing) Co., Ltd: established in 2011, represents to the Group an open door to the huge Chinese market.

**Services Division** the following companies are operating:

- Hotel Executive S.r.l.: built in 1985, a 4-star-hotel;
  - Sanvitale Trasporti e Spedizioni S.r.l.: established in 1972, a company dealing with domestic and international transport and shipments.
- Finmasi Group is featured by deeply ingrained principles and values, the basis for a solid and long lasting reality, driving and inspiring employees and collaborators working for this group: Work Culture, Professionalism, Passion, Excellence, Customer Oriented Philosophy and Pride.

This Group strongly and deeply believes in Made in Italy and Made in Europe, values and guarantees of Excellence and Quality. This Group also believes in a Constant Improvement and this is the reason why it keeps on investing in technology and people. Marcello Masi is the driving force and founder of this group. He is an enlightened entrepreneur who has been able to create an Industrial Group with more than 500 employees with a turnover of about 150 million Euros, thanks to his commitment, to his long term vision and his great ambition.

You can download the brand new Brochure showing our Group in detail by visiting the Finmasi Group website ([www.finmasigroup.com](http://www.finmasigroup.com)).



download area



Italian



English

# news

Since 1971 M.D Micro Detectors S.p.A. develops and produces a wide range of industrial sensors.

M.D. Micro Detectors S.p.A is a company rich in terms of human, professional and material tradition and heritage, which is nowadays a worldwide synonym of technology, quality, reliability, continuity, service and innovation.

It will be enough, just to reinforce the strong and innovative idea managing the whole Company spirit, to think that it has been the first industrial reality to produce the photoelectric sensor M18, today considered an international standard, and also one of the first companies to realize different types of area sensors

Since ever quality and reliability of the products, based also on the customer satisfaction requirements, are the main drivers of the company strategy.

The products portfolio is composed of 6 segments:

- Photoelectric Sensors
- Proximity Sensors
- Ultrasonic Sensors
- Area Sensors
- Safety Devices
- Accessories

M.D Micro Detectors S.p.A. is able, moreover, to propose and realize versions and customizations of the products already listed in the catalogue, basing them on specific customers requirements, and it is also in measure to develop innovative solutions for industrial applications using its own technology.

The production and development processes, based on Lean Manufacturing principles, are subject to continuous controls and all products are always double checked.

Therefore, the extreme M.D Micro Detectors S.p.A. quality has been proven by all certifications the company has got in very short time: the whole System is ISO 9001:2008 norms complying, and a huge amount of products is CE,ATEX, cULus, Diversey,TüV and Ecolab certified.



Micro Detectors

Italian Sensors Technology



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M.D. Micro Detectors  
S.p.A. con Unico Socio

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sps ipc drives  
ITALIA

We will also attend the  
Italian SPS event in  
Parma from 20<sup>th</sup> to 22<sup>nd</sup>  
May 2014!