



METAL ULTRASONIC M30!

AISI 316L STAINLESS STEEL

3,500 mm
sensing range

350 mm blind zone!

AREA SENSOR!

The
**WIDEST
RANGE**
on the Market



MARCELLO MASI

*Interview with
Finmasi Group's
President*

TECHCI HI-TECH PCBs

**LEAN THINKING
A SUCCESS STORY!**



sps ipc drives
ITALIA

Electric Automation
Systems and Components
Trade Fair and Congress
Parma, 20-22 May 2014



Micro Detectors
Italian Sensors Technology



Editorial

...enjoy the future!



sps ipc drives

ITALIA

2013 was another positive and rewarding year for us. The same trend has been confirmed during the first months of 2014.

In 2013 we completed a deep renewal of our organization, a process which, according to the concept of "continuous improvement", is still evolving today and will always be in the future.

In 2013 we created 7 new products and 133 variations. Another 9 new products and 40 variations had been almost completely developed at the end of the year. In 2014, all activities have been carried out with positive results.

We completed the new organization of our Operations management, which has reached an excellent performance level (in terms of Productive Capacity, Productivity, Service, Flexibility), thus providing a huge support to our Sales Department and becoming a real asset for the company, also from a commercial point of view.

We are continuing a massive and efficient Marketing Communication as well as a Product Marketing campaign.

In 2013 our company continued to invest significantly in its industrial equipment as well as in the development of new products. This effort is becoming even more intense in 2014.

Our Quality Department does not act as a "company sheriff", producing piles of paperwork. On the contrary, it is a group of professionals helping the people in the field to work more efficiently. In M.D.'s point of view, Quality has a necessary support function for the other company departments, so that ordinary and extraordinary activities are carried out in a correct, practical and effective way.

We are also continuing to re-organize and strengthen our Sales Department, with the objective of always being nearer to our Customers, providing them with an excellent service with fast replies as

well as a constant and effective technical support. No doubt that, also from this point of view, we have already reached very high performance levels.

This year in March, for the first time in our history we participated in an exhibition outside Europe: SIAF in Guangzhou.

We are proud to say that this is M.D. style: people feeling that work is not just a necessity and an obligation, but first of all a pleasure. A continuous challenge, an instrument to fulfill one's aspirations and at the same time create something that can be useful for everyone, inside and outside our company. People that do not give up but rather face problems and challenges with determination and adrenaline.

This is M.D. style: Team Spirit, Professionalism, Quality, Courage, Initiative, Elbow Grease and huge Quantity. Without exception. Without reserve. Each one of us must be a living example of this Company Philosophy, every day and every minute. Each one of us must always be at the forefront, ahead of everyone else and beside many others who are daily on the front line.

This is M.D. style: be proud and enthusiastic of what has been done and achieved, but at the same time consider it as in the past and focus on what is yet to be done and achieved in the future. This is the secret to realize everything we intend to implement.

Our approach to 2014 is highly positive, confident and determined to accept and win the challenges we have given ourselves. We believe we can do it.

Giacomo Villano
Chief Executive Officer



Summary

In this issue of M.D. news:

Editorial 2

Case History: Electronics Industry 4

Focus on wood industry 6

FC4 slot sensor for on-board applications 8

Lean Thinking, A success story 10

UT1B in AISI 316L Stainless Steel Ultrasonic Sensors in metal housing 12

Case History: Glass industry 16

Focus on Area Sensors 18

M.D. History, Interview with Marcello Masi 26

M.D. Trainee Program 28

An example of excellence – High-tech Printed Circuit Boards: Techci Rhône-Alpes 30

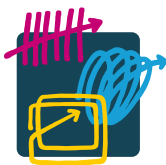
M.D. everywhere

SIAF in Guangzhou March 3rd - 5th 2014



For the first time in its history, M.D. Micro Detectors attended the SIAF - Innovations & solutions in Automation Fair in Guangzhou (China) from the 3rd to the 5th of March 2014.

Thanks to all people who visited our booth and made this event a **success** for our company.



sps ipc drives

Nuremberg
November 25th - 27th 2014



M.D. news Italian



M.D. news English



M.D. news Spanish



M.D. news Chinese



M.D. news French



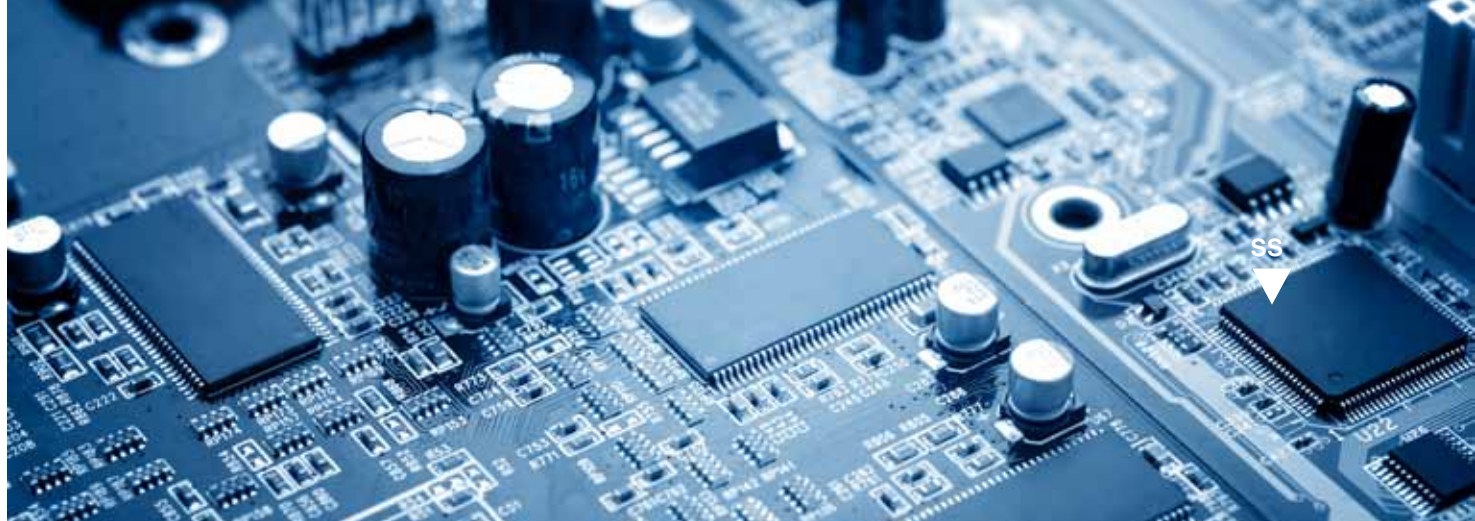
M.D. news German



follow us on
linkedin

Enjoy our
newsletter service:
info@microdetectors.com





Case History

Electronics Industry

IN BRIEF

The Company referred to in this article belongs to an international group performing in different sectors, particularly in the electronics field. Thanks to its high-tech products, advanced components and commitment to innovation the Company has been able to reach the highest market levels in this field globally.

Producers of electronic materials need **precise and reliable** sensors, which are essential to any manufacturing process: starting from the detection of bare lead frames up to the quality control of the finished product.

THE CHALLENGE

Detection on conveyors as well as presence and position controls are typically required in this sector, because **versatile solutions which are reliable and economic sensors are needed for the final assembly of electronic products.**

M.D. Micro Detectors offers a complete product range for this sector: Photoelectric Sensors, Proximity Sensors, Ultrasonic Sensors, Optical Fiber Detection Systems and Area Sensors as well as an extensive range of safety devices.

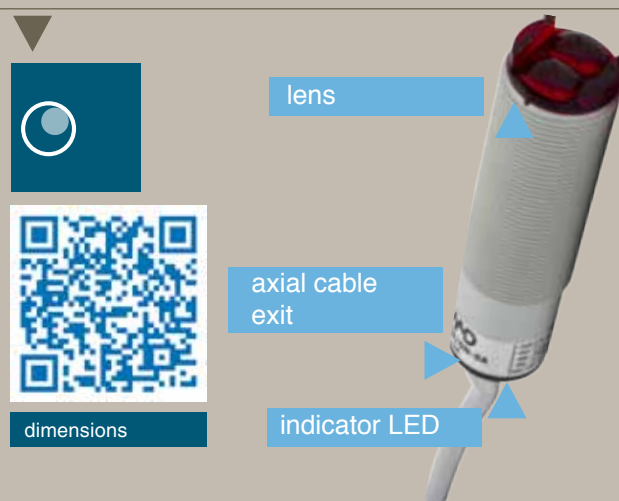
In particular this 5-floor plant which has a production area comprising of 82 complete SMD assembly lines. M. D. Micro Detectors **has solved a problem with Pick & Place machines, thus assuring that printed circuit boards coming out of the convection oven are now read stably and reliably.**

The main critical aspects of this application are the high temperature of PCBs coming out of the oven (about 70°C) as well as the **need to detect each single PCB with extreme accuracy, irrespective of its thickness, colour, material or surface finish**

BENEFITS FOR FINAL CUSTOMER

Among the sensor manufacturers involved in providing possible solutions for the above-mentioned application, only M.D. Micro Detectors was able to offer an **extremely reliable product at the lowest of prices:** product type **SS0/0P-0A**, an M18 cylindrical photoelectric sensor, is used today to solve this application. Detection repeatability is also needed for this application. Thanks to its **extremely reduced spot** and its 1 KHz switching frequency the SS0/0P-0A sensor guarantees a highly accurate repeatable read.

M18 cylindrical photoelectric sensor, item SS0/0P-0A



The main features are the following:

- Background suppression with fixed sensing range up to 50 mm;
- Ø 2-mm visible spot;
- 1 KHz switching frequency;
- IP67 mechanical protection degree.

SS sensors are available in metal housing too



model **SS0 / 0P-0A**



nominal sensing distance S_n	50 mm
minimum detectable object	1 mm
sensibility adjustment	-
emission	red (630 nm)
spot dimension	2 mm
differential travel	$\leq 10\%$
repeat accuracy	5%
light-dark selection	-
U_e operating voltage	10 ... 30 Vdc
ripple	$\leq 10\%$
no-load supply current	-
supply current	30 mA
load current	100 mA
leakage current	10 μ A
output voltage drop U_d	1,2 V max. @ $I_L = 100$ mA
maximum load current	-
output type	PNP or NPN - LO/DO selectable
switching frequency f	1 kHz
time delay before availability	200 ms
supply electrical protections	Polarity reversal, transient
output electrical protection	Short circuit (autoreset), transient
operative temperature range	- 25 ... + 70° C (without freeze)
thermal drift	10% S_r
LED indicators	yellow
interference external light	3,000 lux (incandescence lamp) 10,000 lux (sunlight)
protection degree	IP67 (EN60529)
housing material	PBT (plastic) PC (cable exit)
optic material	plastico
tightening torque	1 Nm
weight (approx)	100 g (plastic)

The main critical aspects of this application are the high temperature of PCBs coming out of the oven (about 70°C) as well as the need to detect each single PCB with extreme accuracy, irrespective of its thickness, color, material or surface finish.

Only M.D. Micro Detectors was able to offer an extremely reliable product at the cheapest price: M18 cylindrical photoelectric sensor, SS0/0P-0A model.



QM



DM



FAL



Proximity



miniaturized



cylindrical



cylindrical



wide range

Additional models suggested:

M.D. Micro Detectors proposes different solutions which are suitable for high temperature working environments.



Focus on wood industry

Photoelectric, Ultrasonic, Proximity, Area Sensors and Safety Devices

In the last few years, the woodworking industry has experienced a continuous and important evolution thanks to new technologies and design requirements but it was also affected by the economic crisis which has meant that only the most financially sound and innovative companies can be market leaders.

Over the years M.D. Micro Detectors has become the ideal partner for such companies, offering them **reliable, cost effective and innovative solutions** for every step of the woodworking process.

DETECTION

BX10 and **BX80** area sensors (with respectively medium and high resolution) enable the operator to detect the passage of wooden panels regardless of their thickness (sensors with minimum **resolution** can detect objects up to **2 mm diameter**, thanks to extended **crossed beams** detection, width (sensors with up to **6-meter sensing range**), colour and gloss. **BX** series is also available with **ATEX certification, category 2 and 3**, for use in painting applications. Thanks to sensors with sensing heights of up to **90 mm**, it is possible to detect uneven panels on conveyors even in cases of jolting. M.D. Micro Detectors can also produce special sensors with **high ambient light immunity**: these sensors are particularly suitable for use in case of external light sources such as **strobe or flashing lights** installed on forklifts in manufacturing plants.

HANDLING

Rational and efficient material handling is a key factor to reduce costs. To accurately detect the presence of materials, **M.D.** offers a complete range of photoelectric sensors in **M12 or M18** cylindrical as well as **cubic**: sensors with **background suppression (BGS)** as well as **diffuse reflection, polarized retro-reflective, through-beam** sensors.

M.D. Micro Detectors also offers a wide range of plastic or glass optical fiber sensors to be used in narrow spaces or in high temperatures.

CONTROL

For a better engineering and calibration of sanding machines by the end customer M.D. produces sensors specifically designed to check oscillations of abrasive belts by means of slot sensors (**FC4 series**) and **background suppression M18** photocells both DC voltage (**MP0 Series**) and AC voltage (**MQ0 models**).



POSITIONING

To get precise positioning of equipment parts you can use **Inductive Sensors**, either in cylindrical (from **3 mm** diameter up to **M30**) or cubic housings. The **new miniature AC1** (\varnothing 4), **AD1** (M5), **AHS** (\varnothing 6,5) and **AES** series' sensors have a very high switching frequency (up to **7 kHz**) and can therefore be used on spindle holders to check rotation and tool presence.


To detect the presence of panels or the height of stacked materials of any colour, it is possible to use the **UK** series' of Ultrasonic Sensors. With a sensing range of up to **2,200 mm**, digital as well as analogue outputs, they can replace the bigger and more expensive **M30** models as well as background suppression photocells which can be affected by the presence of shiny wrapping films and dust.

The **UK6** ultrasonic M18 sensors in a compact housing can easily fit into machines, for example

under roller conveyors for detecting and positioning wooden panels.

PROTECTION

Operators' safety is guaranteed by means of **LS2** and **LS4** safety light curtains (category 2 and 4) with a resolution of up to **14 mm**. In case a **muting function** is needed, it is possible to use **SB400M** relays interface module or **LP4** Series. Access protection can also be assured with the **SH** Series' (M18) or **TH** Series' (M30) single-beam sensors to be used together with **SBCR03** control unit, which is also available with **muting function**. In addition to its full range of sensors for on-board applications, M.D. provides all the accessories needed for the correct installation and use of the sensors themselves: **PVC** and **PUR** connection cables, prismatic reflectors and mount brackets.



Operators' safety is guaranteed by means of **LS2** and **LS4** safety light curtains (category 2 and 4) with a resolution of up to 14 mm. In case a muting function is needed, it is possible to use **SB400M** relays interface module or **LP4** Series.



BX10 and **BX80** area sensors (with respectively medium and high resolution) enable the operator to detect the passage of wooden panels regardless of their thickness (sensors with minimum resolution can detect objects up to 2 mm diameter, thanks to extended crossed beams detection, width (sensors with up to 6-meter sensing range), colour and gloss).

To detect the presence of panels or the height of stacked materials of any colour, it is possible to use the **UK** series' of ultrasonic sensors. With a sensing range of up to 2,200 mm, digital as well as analogue outputs, they can replace the bigger and more expensive **M30** models as well as background suppression photocells which can be affected by the presence of shiny wrapping films and dust.



FOUR
BEAMS!

Focus on

FC4 slot sensor for on-board applications

APPLICATIONS

Production of parquet and wood flooring, pieces of furniture and finishes for the wood industry, panels for metalworking and plastics processing.

THE PROBLEM

Sanding machines are usually equipped with a constantly oscillating belt so that the panel can be uniformly sanded, with no cracks. In particular, panels are carried on a conveyor belt and moved to the sanding belt running just over them (see fig. 1). Since the panel could have a different size compared to the belt (see fig. 2), this must keep swinging to guarantee a uniform sanding.

THE SOLUTION

If the belt does not swing, panels could still have some cracks on the surface after sanding.

Furthermore, **the swing range has to be carefully checked**, sending an alarm signal to the operator in case the belt is moving differently from the normal working range, thus leading to a possible machine breakdown.

It also has to be noticed that these machines typically operate in high fire risk environments. Sudden movements of the belt may cause potentially incendiary sparks resulting in huge losses for the company.

Figure 1

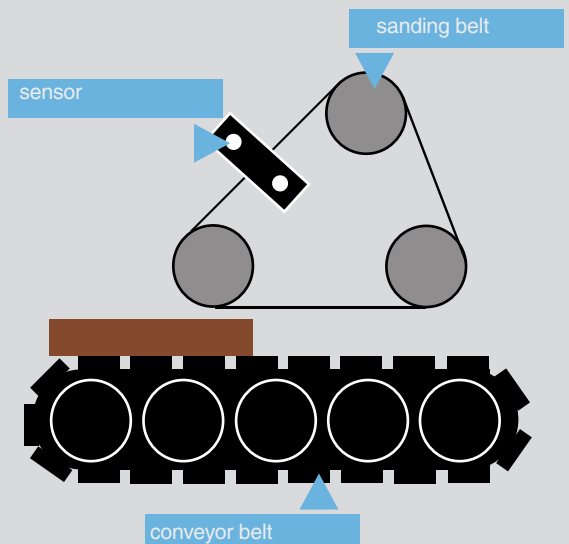
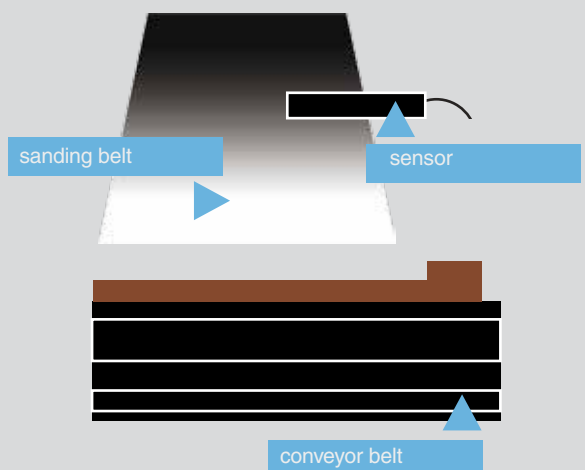


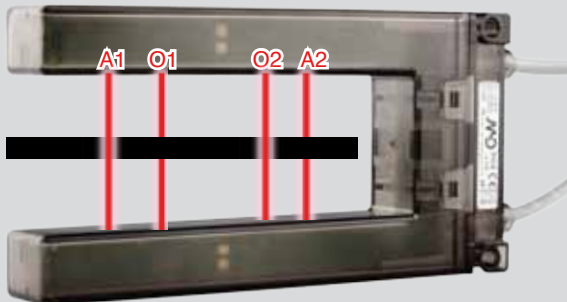
Figure 2



With FC4-fork sensor for on-board applications, the aspects mentioned above can be easily and effectively checked by means of **4 light beams** (see fig. 3) with the following functions:

- O1/O2 beams detect the swing range
- A1/A2 beams send an alert in case of incorrect positioning.

Figure 3



- A1 beam is always interrupted
- The oscillating belt interrupts O1 beam first, then O2 beam too
- At this point the sensor's output changes and the machine makes the belt move on the opposite side
- Consequently, O1 and O2 beams are free
- Then the output changes and the cycle begins again.

The belt works correctly when it oscillates alternatively between beams O1 and O2, which, placed at a distance of 7 mm, can define the right swing range. If the belt interrupts beam A1 or A2, it is in the wrong position and the sensor stops the machine giving an alarm signal to the operator.

In this way, a wrong positioning of the belt can be detected by FC4 sensor alone, without micromechanical switches (typical for this kind of applications). Therefore, it is not necessary to wire both sides of the machine.

Moreover, without micro switches, even unskilled personnel can easily insert the belt in the machine. Thanks to its two beams O1 and O2, FC4 allows the operator to detect the belt and its correct swing range even when the belt is frayed, which would not be possible with one-beam sensors.

As a consequence, adjustable pistons get less worn out and energy consumption can be reduced.

A wrong positioning of the belt can be detected by FC4 sensor alone, without micromechanical switches (typical for this kind of applications). Therefore, it is not necessary to wire both sides of the machine. Moreover, without micro switches, even unskilled personnel can easily insert the belt in the machine.

FC4



Special

FC4



dimensions	26 x 83 x 162 mm	
contrast scanner	—	
luminiscent scanner	—	
sensing distance Sn	—	
slot sensor for control edge detection	●	
slot sensor for object detection	—	
slot sensor for labels detection	—	
sensing distance	h = 43 mm	
depth detection slot	—	
minimum object dimension	—	
emission	IR	
switching frequency	25 Hz	
supply voltage	Vdc	●
	Vac	—
output type	NPN - NO	—
	NPN - NC	—
	PNP - NO	—
	PNP - NC	—
	NPN - NO / NC	—
	PNP - NO / NC	●
	NPN/PNP - NO/NC	—
SCR	—	
temperature range	-25°C...+55°C	
protection degree	IP67	
housing material	PC	
head material	PC	
output	cable	●
	plug	M12 pig-tail
ATEX	—	
other certifications	CE	

HIGHLIGHTS

- Slot sensor for on-board applications, four beams
- Two static outputs + alarm contact
- IP67 protection degree



Lean Thinking

A success story

Starting from the second half of 2011, M.D. Micro Detectors has introduced and adopted the concepts of Lean Thinking. The company organization is now completely structured and managed according to this system.

After this major and radical change in the company history, M.D. Micro Detectors now works according to an Efficient, Practical, Effective and Simplified system. The company can offer its customers an Excellent Level of Service and a Manufacturing System in which Quantity, Efficiency and Product Quality are guaranteed. M.D. Micro Detectors now has a vertically integrated process: from the Development of New Products to Packing and Shipping, all activities are carried out at our plant in Modena.

This is the result of the complete reorganization of several manufacturing activities and technologies during the last three years.

The organization and daily work of our people has been deeply transformed and improved according to the following Lean Thinking principles:

Mr. Roberto Bosani – Engineer – R&D Manager

“The implementation of Lean principles has positively and totally changed my colleagues’ and my personal attitude to work and has improved interaction with other company departments. The experience has been really positive and has led to clearly visible results in terms of both numbers and organization. We have managed to dramatically reduce the amount of our activities and outsourced resources. As a consequence, we could focus on the development of new products and customizations, with shorter engineering lead times and in tight cooperation with our Operations Management to develop products which are easy to use and to manufacture.”

- Efficiency
- Flow
- Standardization
- Visual Management
- Simplification
- Continuous Improvement
- Team Work
- Reduction of Indirect Activities and Non-Value Added Activities.

Since the process started two and a half years ago, M.D. has achieved and consolidated the following results:

- a. Review and Improvement of its Organization in each area of the company.
- b. More Productive Capacity and Productivity, particularly regarding Operations and R&D.
- c. Complete Control of the Manufacturing Process. The standardization of work as well as of the operational and managing instruments, together with the commitment to simplifying and eliminating productive inefficiencies, enabling us to completely and constantly control the processes and their performance.
- d. More Flexibility and Reactivity thanks to a vertical Manufacturing process.
- e. Simpler Processes and Procedures. Everything is now more immediate, rational, straightforward, visual. Thanks to the Lean revolution we have improved our performances without jeopardizing our strict quality parameters.
- f. Significant improvement of the service offered to Customers. Fast replies and deliveries are now the main strength of our business and they are essential to our growth on the market.
- g. Self-aware and Responsible Personnel. Thanks to the deep re-organization, roles and functions are now clearer and several people have the possibility to undertake tasks of bigger responsibility.
- h. Improved professional background of our employees. The introduction of new techniques and methodologies has led to an overall higher

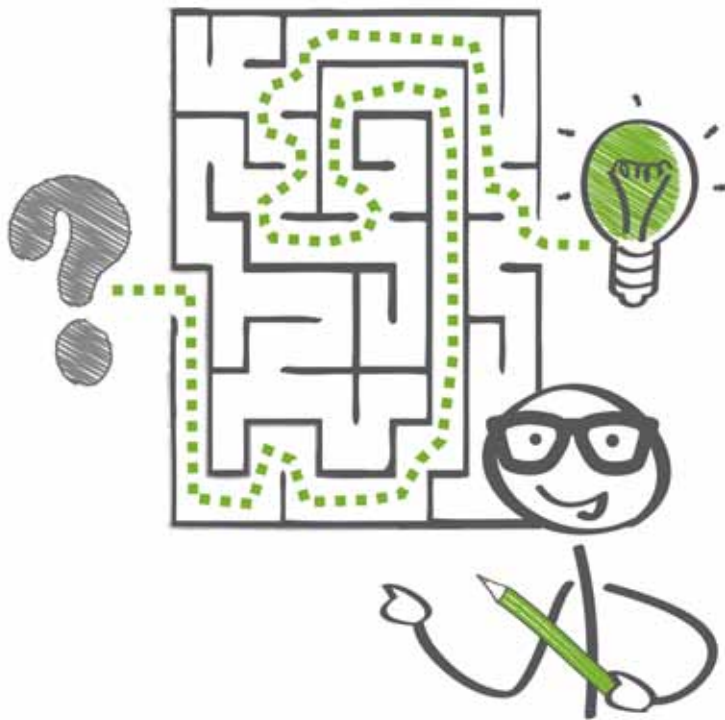
professional level of our people. For example, we have constantly applied the principles of multi-tasking and inter-changeability to our manufacturing process, thus making our personnel acquire new professional competences and learn team-work as well as team-spirit.

- i. Continuous Improvement Approach: this is a “positive contagion” at all levels, in the daily work as well as for strategic decisions.
- j. Standard approach to work and documentation: we have applied the principles of Takt Time, Standard Work, Standard Working Tool and Standard Documentation, making our work simpler and easier to control.

M.D. Micro Detectors has in fact gone through an authentic revolution by adapting the Lean principles to its particular business as well as to its Team, considered as a group of people involved but also as individuals with their own characteristics.

The changing process of M.D. Micro Detectors was encouraged from the outside, but it was mainly put into practice by M.D. employees. They are the most important and necessary subjects involved in this radical change.

We are sure that M.D. Micro Detectors is an excellent example of how Lean Thinking can be successfully applied to small-medium companies. We also know that the application of Lean to our organization and operations has led to significantly better performance.



Thanks to the application of Lean concepts, we have enhanced two existing characteristics of our company:

- smooth, straightforward communication;
- short decision-making process.

With Lean we have been able to apply the most up-to-date organizational and managing methods to express the values which the majority of people in M.D. had already been actively promoting for many years: strong work ethic, common sense and the willingness to take up professional challenges.

Mr. Claudio Guerzoni – Engineer – Operations Manager

“Lean Thinking is a “positive contagion” affecting all of us. Today, Continuous Improvement and the commitment to simplification and efficiency are part of our daily practices. The implementation of Lean Manufacturing has dramatically improved the performances of our Operations Management. The most impressive and positive result has been the reduction of delivery times. Put us to the test! With Lean Thinking we can now easily make the most of our Passion for work.”





LASER MARKED!



UT1



UT1B in AISI 316L Stainless Steel

Ultrasonic Sensors in metal housing

M.D. Micro Detectors is pleased to announce a further enlargement of **M30** Ultrasonic Sensors' range - UT1B series – introducing the new **models with AISI 316L stainless steel metal housing**.

The new UT1B metal models have a **working distance of up to 3,500 mm, a 350-mm blind zone and a 1-Hz switching frequency**.

UT1B models with double digital output are equipped with an **adjustable hysteresis function** to detect the maximum and minimum level of liquids or powders, or with a **standard window** allowing a single output.

The **Teach-in button is multifunctional**: it allows to select the working range thus improving resolution and allowing slope inversion when using the analog output. The button is also used to change the digital output state. In addition to that, it allows the operator to select the correct function on double digital output models.

The yellow LED provides information about output state, adjustment procedure and function options, whereas the green LED, which is clearly visible even from a certain distance, shows echo return pulse, thus allowing the user to easily align the sensor with the target.

All UT1B ultrasonic sensors are **completely filled with resin to guarantee IP67 protection level**. Therefore, they can be used also in applications subject to vibrations and frequent washing.

Thanks to the continuous development of ultrasonic technologies and to the enlargement of its product portfolio, M.D. Micro Detectors has now become a market leader with an extremely wide range of products and an excellent technological know-how.

HIGHLIGHTS

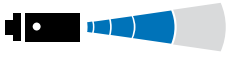
- AISI 316L stainless steel housing
- **M30 compact** Ultrasonic sensors – **high performances** and long sensing distance
- Models with adjustable digital output: versions with two programmable outputs
- Adjustable hysteresis function: model with double programmable digital output specifically designed for level detection
- Models with voltage/current analog output: programmable threshold and slope for a better resolution
- Adjustment of working area (window function or adjustment on target) by means of Teach-in button on all models for a fast and easy start
- **Two multifunction LEDs**, Teach-in and NO/NC selection functions (yellow) and echo (green)
- **Temperature compensation on all working range**
- IP67 Protection degree
- **LASER marking**

RESIN-FILLED FOR ENVIRONMENTS SUBJECT TO VIBRATIONS

industries and applications

- earth moving equipments
- storage facilities
- agricultural machineries
- ceramic industry
- waste disposal devices
- manufacturing industry



model	UT1B/E*-1*UL
	
nominal sensing distance S_n	3,500 mm ⁽¹⁾
minimum operating distance (blind zone)	250 mm
beam angle	$\pm 7^\circ$
switching frequency (digital output)	2 Hz
response time (digital output)	250 ms
differential travel	1% of full scale value
repeat accuracy	1% of full scale value
linearity error	1% of full scale value
operating temperature	-20° ... +70°C
temperature compensation	yes
thermal drift	$\leq 7\%$
rated operational voltage U_e	12..30 Vdc; 15..30 Vdc for model with analog voltage output (0-10 V)
maximum ripple content	5%
leakage current	$\leq 10 \mu A$ ($V_{dc} = 30 V_{dc}$)
output voltage drop	2.2 V max ($I_L = 100mA$)
No-Load supply current	$\leq 50 mA$
maximum load current (digital output)	100 mA
minimum load resistance (analog voltage output)	3 k Ω
sensitivity adjustment	Teach-in button
supply electrical protections	polarity reversal, transient
digital output electrical protections	short circuit (auto reset), overvoltage pulses
EMC	Conforming to the EC Directive 2004/108/EC requirements according to EN 60947-5-2
electrical protections (analogue output)	overvoltage pulses
protection degree	IP67 (EN 60529) NEMA 4X ⁽²⁾
housing material	PBT
active head material	epoxy-glass resin
weight	104 g (plug exit) - 167 g (cable exit)
storage temperature	-35° ... +70°C (without freeze)

⁽¹⁾ Metallic target 200 x 200 mm

⁽²⁾ Protection granted only by plug mounted in a correct way

UK1: M18 AISI 316L

- Models with adjustable digital output: two programmable outputs
- Models with analog voltage and current output: programmable threshold and slope for a better resolution
- Adjustment of working area (window function or adjustment on target) by means of teach-in button on all models for a fast and easy start
- Multifunction LED: output status, adjustment procedure and NO/NC selection functions and analog output slope
- AISI 316L Stainless steel housing, cable and 4-pin plug exit
- Adjustable hysteresis function: model with double programmable digital output specifically designed for level detection

UK6: M18 AISI 316L

- Models with single adjustable digital output
- Models with voltage/current analog output: programmable threshold and slope for a better resolution
- Adjustment of working area by means of external teach-in to avoid tampering
- Two different functions for working area adjustment on all models: window function and adjustment on target
- Two Multifunction LEDs: green LED for echo detection and orange LED for output state, Teach-in and NO/NC selection or analog output slope
- Full protection against electrical damages

Last but not least, M18 standard and short housing metal Ultrasonic Sensors are now part of our product range.

UT1 Ultrasonic Sensors are available in plastic housing, with cable and plug.





LASER MARKED!

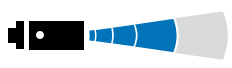
METAL MODELS FOR SPECIFIC ENVIRONMENTS



M18 standard (UK1 series), M18 short housing (UK6 series) and M30 Metal Ultrasonic Sensors (UT1 series).

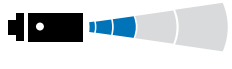
- Models with adjustable digital output: two programmable outputs
- Models with voltage/current analog output: programmable threshold and slope for a better resolution
- Adjustment of working area (window function or adjustment on target) by means of a teach-in button on all models for a fast and easy setup
- Multifunction LED: output state, adjustment procedure and NO/NC selection and analog output slope
- Plastic and AISI 316L stainless steel housing, cable and 4-pin plug exit
- Adjustable hysteresis function: model with double programmable digital output specifically designed for level detection

UK1




■ Up to 1,500 mm working distance

UK6



■ Up to 700 mm working distance

UT1



■ Up to 3,500 mm working distance

RESIN-FILLED
FOR
ENVIRONMENTS
SUBJECT TO
VIBRATIONS

		M18 with Teach-in button			M18 short housing		M30
		UK1A <small>New series</small>	UK1C <small>New series</small>	UK1D <small>New series</small>	UK6A <small>New series</small>	UK6C <small>New series</small>	UT1B <small>New series</small>
dimensions		M18	M18	M18	M18	M18	M30
direct diffuse		50...400 mm	100...900 mm	200...1,500 mm	40...300 mm	120...700 mm	350...3,500 mm
retroreflective		—	—	—	—	—	—
through beam		—	—	—	—	—	—
power supply	Vdc	•	•	•	•	•	•
	Vac	—	—	—	—	—	—
output type	2 x PNP with hysteresys function 2 x NPN with hysteresys function	Teach-in button	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	—
	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	—	—	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	—	—	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	-20°C...+70°C
protection degree		IP67	IP67	IP67	IP67	IP67	IP67
housing material		stainless steel AISI 316L	stainless steel AISI 316L	stainless steel AISI 316L	stainless steel AISI 316L	stainless steel AISI 316L	stainless steel AISI 316L
front-end material		epoxy glass resin	epoxy glass resin	epoxy glass resin	epoxy glass resin	epoxy glass resin	epoxy glass resin
output	cable	•	•	•	•	•	•
	M12 plug	•	•	•	•	•	•
	M12 pig-tail	—	—	—	—	—	—
other certifications							

FF

PFM

PFK

PFM-26

PFK-26

Additional models

IP69K

IP69K

IP69K

IP69K

IP69K

FOR
HARSH
ENVIRONMENTS



threaded
part of UK6A
housing is
45 mm long

UK6



Glass Industry

UK6A Ultrasonic sensors for the Flat Glass Industry

IN BRIEF

Our Customer creates machines and systems for the production and transformation of flat glass for furniture, construction and automotive industries. Thanks to high-technology products, state-of-the-art components and successful constructive concepts, our Company has been able to become the worldwide market leader in this sector.

THE CHALLENGE

The application needs the presence and the positioning of glass panes to be detected, for structural glasses' production as well as for jumbo-size sheets and big pieces of furniture (such as tables, doors, etc.).

The sensor must not be affected by the transparency of the material, or by its thickness, markings or liquids used in the manufacturing process. Moreover, the sensor must be installed on the workbench and with the **sensing head pointing upwards, therefore it must be immune to optical interferences due to external lighting systems** (incandescent lamps, led and neon lights) or dust deposits.

BENEFITS FOR THE FINAL CUSTOMER

The ideal solution for this application is our UK6A **special Ultrasonic Sensor**. The sensor has a compact **M18 housing (60 mm long)**, sensing range up to **200 mm** and an extremely reduced blind zone of **40 mm**. Working distance is adjusted with a **cable remote Teach-in**, so that the operator does not need to adjust the sensor manually. Therefore, the sensor can be easily installed inside the machine. The high working frequency (more than **10 Hz**) enables precise positioning of the glass pane.

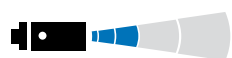
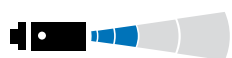
Since the detecting technology is not optical, the sensing direction can be set upwards without any interference by other lighting systems. Any material deposit on the sensing head does not prevent the sensor from working properly. Moreover, **UK ultrasonic sensors** (both **UK1** with standard housing and **UK6** with compact housing, can be used not only for horizontal glass working but also in all other applications for glass treatment and manufacturing. From storage systems and surface treatments to glass bevelling, UK ultrasonic sensors guarantee an extremely accurate and reliable detection.

UK series M18 are available both with either a plastic or metal housing (**stainless steel Aisi 316L**) and with either built in cable or **M12** connector. Outputs are digital (single or double), analogue (current and voltage) and mixed (digital/analogue). **UK1F** sensors can reach a working distance of up to **2,200 mm**, which makes it a valuable alternative to **M30** sensors, which are typically bigger and more expensive.

M.D. also offers sensors with **M30** housing (**UT1B** sensors, with **3,500 mm** sensing range) and **M30** sensors with **Ø 38 mm** sensing front end (**UT2F** sensors with **6,000 mm** sensing range). These sensors are mainly used for tank level detection (for industrial waste water tanks, for example), height measurement of piled up materials on pallets, object detection in automated warehouses, on agricultural machines to detect and measure the distance between rows of plants or logs.



models	UK6A/D* - 0*UL	UK6A/D* - 1*UL
--------	-----------------------	-----------------------



maximum sensing distance	300 mm ⁽¹⁾	300 mm ⁽²⁾
minimum operating distance (blind zone)	40 mm	
beam angle	± 10°	
switching frequency (digital output)	40 Hz 20 Hz UK6A/D*0*1FUL	10 Hz
response time (digital output)	12 ms 25 ms UK6A/D*0*1FUL	25 ms
hysteresis	2%	
repeat accuracy	2%	
linearity error	≤ 3%	
temperature range	-20°C ...+60°C	
temperature compensation	si	
operating voltage	15 - 30 Vcc	
thermal drift	< 7%	≤ 7% (digital output); 5% (analogue output)
ripple	5%	
leakage current	≤ 10 µA @ 30 Vcc	
output voltage drop	2,2 V max (IL=100mA)	
no-load supply	≤ 35 mA	≤ 40 mA
maximum load current (digital output)	100 mA	
adjustment set point	external Teach-in	
time delay before availability	≤ 300 ms (digital output); ≤ 900 ms (analogue output)	
supply electrical protection	Polarity reversal, transient	
electrical protection (digital output)	Short circuit (auto reset), overvoltage pulses	
electrical protection (analogue output)	Overvoltage pulses	
EMC	Conforming to the EC Directive 2004/108/EC requirements according to EN 60947-5-2	
protection degree	IP67 ⁽³⁾ (EN 60529)	
housing material	PBT	stainless steel AISI 316L
front end material	epoxy-glass resin	
tightening torque	1 Nm	50 Nm
weight	15 gr (plug exit), 80 gr (cable exit)	35 gr (plug exit), 95 gr (cable exit)
storage temperature	-35°C...+70° without freezing	

(1) Metallic target 100x100 mm

(2) Metallic target 200x200 mm

(3) Protection granted only by plug mounted in a correct way

industries and applications

- earth moving equipments
- storage facilities
- ceramic industry
- waste disposal devices
- manufacturing industry





Focus on Area Sensors

CX1, CX2, BX04, BX10, BX80 series

M.D. Micro Detectors, has always been a top-quality designer and manufacturer of Area Sensors and is pleased to introduce the **new CX series**, confirming its market leadership for this product type.

A NEW MARKET STANDARD!

CX series includes **two product families: CX1 with basic functions and CX2 with advanced functions.**

With their 20x35 mm aluminum profile, the new CX models are among the **smallest area sensors available on the market.**

Thanks to the **crossed beam technology**, CX1 models can detect objects down to **1-mm** in diameter. Models with up to **480 mm controlled area height and 3 m working distance** are available.

CX1 items are provided with **optical synchronization, thus making installation and connection easier.** Resolution can be adjusted by means of a separate external module using a TRIMMER, which can be disconnected once the adjustment has been completed, to be then re-used for other area sensors.

Thanks to the full range of functions and outputs of **CX2 series**, the different models available in this family have been developed to offer a solution for any customer application. Therefore, this product is

extremely flexible and perfectly meets Customers' requirements.

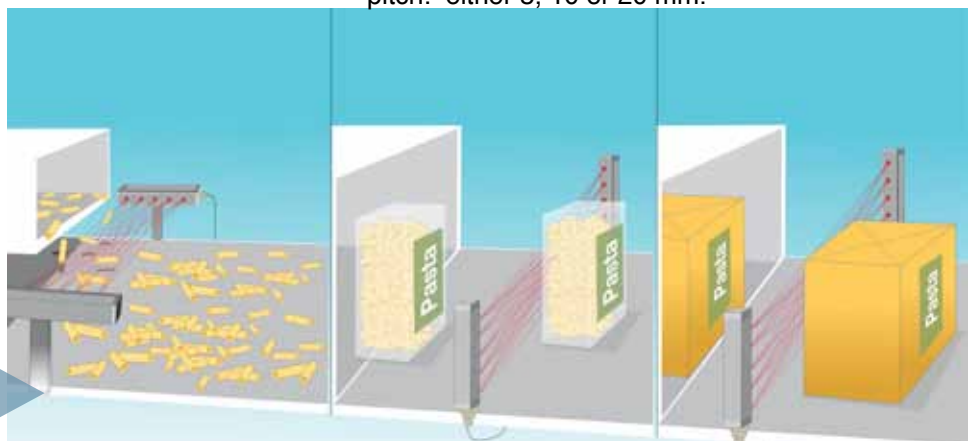
Just two versions can satisfy all output logics, both digital and analogue: the **double analogue output – 0-10 and 4-20 mA** – model, which is invertible, and the model with **PNP and NPN**-double digital output with the possibility to select the **NO/NC** state.

CX2 Area Sensors can either detect the presence of objects (crossed beams models) or measure their height or positioning (parallel beam models) with a **controlled area height of up to 980 mm and a working distance up to 6 m.** In addition to that, CX2 models are self-adjusting and can therefore **detect objects which are even smaller than 1 mm.**

M.D. pays much attention to the manufacturing details of its new products in order to meet Customers' specific needs and find the best solutions for their applications. In this case, for example, a **blanking function has been developed to guarantee proper functioning of area sensors even on machines with mechanical constraints.**

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

High resolution allows detection of small or irregular objects



Three LEDs on the top and bottom parts of the area sensor, which are **clearly visible through its front end, allow the operator to easily check the output state**, thus making the installation of the sensor simpler. User-friendliness and a great functional flexibility are the key features of these new Area Sensor families.

MEDIUM AND HIGH RESOLUTION AREA SENSORS

BX04, BX10 and BX80 series were among the first products of this kind to be launched by M.D. Micro Detectors on the Industrial Automation market. These sensors are **extremely compact and guarantee an excellent crossed-beam detection**.

With only **4 optical beams**, **BX04** models can detect objects **down to 15 mm diameter and cover up to 6 m working distance**. These products are specifically meant for customers who need **compact solutions providing excellent performances at a highly competitive price**.

With **10 optical beams**, **BX10** models can detect objects down to 5 mm diameter. **Both accurate and user-friendly**, these devices can cover up to 6 m distance between emitter and receiver.

Finally, the **BX80** models with **12 optical beams** can detect down to 2 mm diameter or less and are therefore the best-performing products of this type. BX family has an **IP67 Protection degree**, thus guaranteeing better protection compared to IP65 market standard.

AREA SENSORS FOR HARSH ENVIRONMENTS

BX Series area sensors in cubic housing with **IP69K Protection degree**.

BX products are the first area sensors **designed for machines which must be cleaned with high-pressure water jets**, for example in the food and beverage industry, thus assuring the best protection of these devices without the traditional accessories used today, such as PMMA tubes.

Enduring water jets at 100-bar pressure and 80°C-temperature, these sensors are extremely sturdy and suitable for applications in harsh environments.

Complete water-tightness is guaranteed by a totally resin-filled body and ultrasonic welding between front glass and sensor housing, while laser marking assures a **perfectly clean housing**. Models in an aluminum housing and with air-cooling systems are also available and ideal for use in ovens and furnaces as well as in the metal processing industry.

Cat. 2 and cat. 3 ATEX-certified models for use in explosive areas can also be provided upon request.

AREA SENSORS FOR FOOD & BEVERAGE VENDING MACHINES

M.D. Micro Detectors has the right solution for the vending Industry too. **NX** and **CST539** area sensors are multi-beam devices specifically developed for the Vending Machine Market.

The **NX** model, installed on the edge of the vending machine drawer, is used to **detect any type of object** such as snacks, cigarette packs, DVD's, bottles and objects as small as 5 mm in diameter within typically a 2 m working range.

Since the sensor has no housing and is provided with radial optics, **it can be installed in small places, as usual found in vending machines. The models with anti-moisture coating on top are the most suitable solution for vending machines equipped with internal refrigeration**, because the sensor is protected from condensation when the machine is opened.



The **CST539** model is specifically designed to **detect objects in free fall** and to work in the most difficult installation conditions, for example in case of misalignment between emitter and receiver or dirty optical devices due to broken bottles inside the vending machine.

A green LED on the side of the receiver shows the level of the received signal whereas a yellow LED on the front part of the receiver shows the output status, indicating the objects falling inside the automatic dispenser drawer. **Both LEDs are clearly visible in a transparent plastic case and allow a quick check of the output state.**

Two additional functions are available and they allow the user to:

- **indicate products stuck in a drawer on an anti-theft blade**
- **avoid theft by means of an anti-intrusion function.** Emitter and receiver are pre-wired for a quicker installation on the machine.

Both solutions are extremely reliable and need little or no maintenance after installation!

Many years of experience, a wide range of products with special functions and outstanding performances make M.D. Micro Detectors the ideal partner for customers needing the best area sensors for the most challenging applications. Last but not least, M.D. Micro Detectors made in Italy production is a guarantee for top quality and reliability.



Area

Area Sensors

		BX04	BX10	BX80	CX1 New Series	CX2 New Series
						
dimensions		20x44x120 mm	20x44x120 mm	20x44x120 mm	20x35 mm	20x35 mm
sensing distance		up to 6 m	up to 6 m	up to 2.5 m	up to 6 m	up to 6 mm
controlled area height		90 mm	90 mm	70 mm	from 160 mm to 480 mm	from 160 to 960 mm
beam type		crossed	crossed	crossed/parallel	crossed	crossed/parallel
minimum detectable object		up to ø 15 mm	up to ø 5 mm	up to ø 2 mm	up to ø 1 mm	up to ø 1 mm
number of optics		4	10	12	from 33 to 97	from 33 to 97
optics step		30 mm	10 mm	6 mm	5 - 10 mm	5 - 10 - 20 mm
blinking		—	—	—	—	●
power suppld	Vdc	●	●	●	●	●
	Vac	—	—	—	—	—
output type	NPN + PNP - NO	●	●	—	—	—
	NPN + PNP - NC	●	●	—	—	—
	NPN - NO / NC	—	—	●	—	—
	PNP - NO / NC	—	—	●	—	—
	PNP - NO	—	—	—	—	—
	NPN - NO	—	—	—	●	—
	PNP - NC	—	—	—	●	—
	NPN - NC	—	—	—	●	—
	1xPNP NO/NC + 1xNPN NO/NC	—	—	—	●	●
	1 x 4...20 mA + 1 x 0...10 V	—	—	—	—	●
NPN + 4...20 mA + 0...10V	—	—	—	—	—	
temperature range		0°C...+50°C	0°C...+50°C	-25°C...+50°C	-25°C...+55°C	-25°C...+55°C
protection degree		IP67	IP67/IP69K	IP67/IP69K	IP67	IP67
housing material		valox / PC	valox / PC	valox / PC	alluminio	alluminio
head material		PC	PC	PC	PMMA	PMMA
output	cable	●	●	●	—	—
	M12 plug	●	●	●	—	—
	M12 pig-tail	—	—	—	●	●
	MOLEX 22-05-7048	—	—	—	—	—
ATEX		II3GD	II2GD, II3GD	II3GD	—	—
other certifications						

industries and applications

- wood industry
- logistics and automated warehouses
- packaging industry
- automotive industry
- industrial automation
- vending machines



IT DOES NOT
MATTER HOW
TRANSPARENT,
TINY OR
COLOURED
THEY ARE

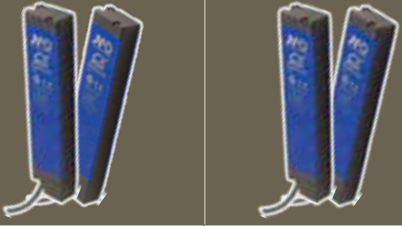



CX1 and CX2 Area Sensors

- Controlled area height from 160 to 960 mm
- Working distance up to 6 m
- Small object detection down to \varnothing 1 mm
- External potentiometer or automatic Teach-in for sensitivity adjustment
- Blanking function
- Synchronization: optical or by cable
- Control by microprocessor
- Extremely sturdy rectangular housing
- IP67 Protection degree
- Full protection against electrical damages



synchro-
nization:
optical or
by cable

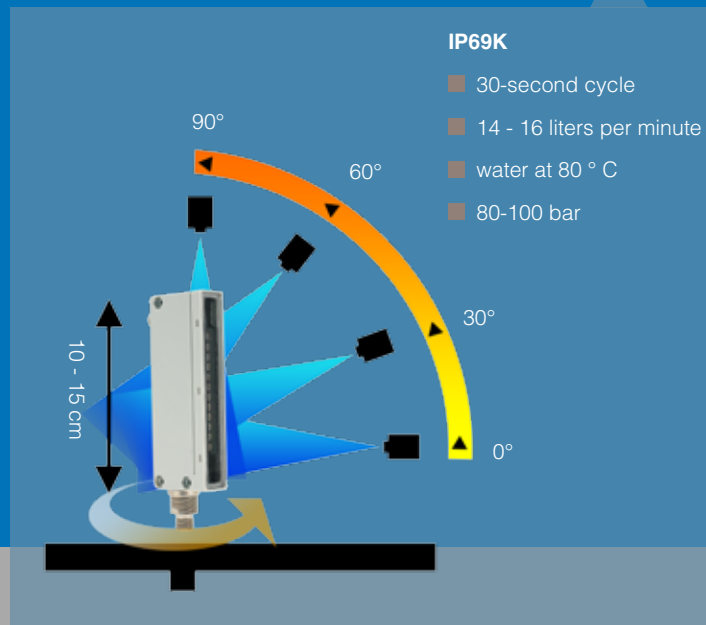
		
modelli	CX1	CX2
		
nominal sensing distance sn	6 m	
response time	depending on the configuration	
controlled area height	up to 480 mm	up to 960 mm
beams quantity	up to 97	
beam's pitch	5 / 10 mm	5 / 10 / 20 mm
minimum detect. object	1 / 3 beam's pitch	1 / 10 beam's pitch
min. operating distance	> 0,3 mm	
beams	crossed	crossed/parallel
differential travel	max. 15%	
repeat accuracy	5 %	
tolerance	0..+20%	
operating voltage	16.8..30 Vdc	
no-load supply current	2,4 W (riceiver), 4 W (emitter)	
load current	100 mA max	
leakage current	10 µA (at max operating voltage)	
voltage drop	1,5 V max. (I _L = 100 mA)	
output type	NPN/PNP; NO/NC	NPN/PNP; totem pole; NO/NC analogue 4..20 mA, 0...10 V
blinking	no	yes
synchroism	optic	one cable
link	M12 connector cable, 4 - 5 pins	M12 connector cable, 4 - 5 - 8 pins
connector cable lenght	0.25 m	
excess gain	2	
angular displacement	± 30° (optics step 5 mm) ± 15° (optics step ≥ 10 mm)	
time delay before availability	depends on the model	
supply electrical protections	reversal polarity and voltage transient	
output protections	short circuit (auto reset)	
operating temperature range	-25°...55°C (without freeze)	
storage temperature	-25°...70°C	
temperature drift	10% Sn	
external light (IEC60947-5-2)	10 kLux (optics step 5 mm) 100 kLux (optics step ≥ 10 mm)	
protection	IP67 (EN 60529)	
emitter's led indicators	green (supply) / red (alarm sync.) / yellow (area state)	
receiver's led indicators	green (supply) / red (alignment) / yellow (output state)	
housing material	aluminium / PBT	
head material	PMMA	
weight (approx)	300 - 800 g	300 - 1,600 g

THE ONLY IP69K-CERTIFIED AREA SENSORS



IP69K-certified BX10 and BX80 Area Sensors

- Controlled area height from 70 mm to 90 mm
- Working distance up to 6 m
- Small object detection down to Ø 2 mm
- Sensitivity adjustment by trimmer
- Extremely sturdy rectangular housing
- IP67 / IP69K protection degree
- Full protection against electrical damages



SPECIAL VERSION WITH ALUMINUM HOUSING FOR HARSH ENVIRONMENTS



BX80



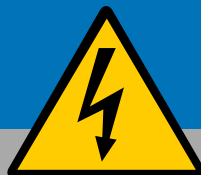
BX10



IP67
protection
degree

BX10 and BX80 Area Sensors special version with aluminum housing

- Controlled area height from 70 mm to 90 mm
- Working distance up to 6 m
- Small object detection down to \varnothing 2 mm
- Sensitivity adjustment by trimmer
- Extremely sturdy rectangular housing
- IP67 protection degree
- Full protection against electrical damages





M.D. History

Interview with Marcello Masi

Marcello Masi is the founder and owner of Finmasi Group, which includes several companies performing in different sectors, with total consolidated revenues of about 150 million euros and a personnel of over 500 people. The Group is active in the steel and electronic industry as well as in the service sector. M.D. Micro Detectors S.p.A. and its subsidiaries are a part of the Group.

Marcello Masi started to work as an entrepreneur back in 1961 and, in more than 50 years of uninterrupted activity, he built every single part of the Group, which he still leads with his ideas, his passion and his strategic thinking. His “shops”, as he likes to call the companies belonging to Finmasi Group, are always open, including on Saturdays and Sundays, night and day, for customers all over the world.

With deep passion for his work and enthusiasm for challenges, during his long-time activity he has always been on the frontline, beside and ahead of his people. Marcello Masi let the facts speak for themselves and show that he has been able to create value and genuine wealth inside his Group and for all his employees and co-workers.

Who is Marcello Masi?

I was born on the 24th of January 1939 in Crevalcore, in the province of Bologna. Usually, when I talk about my life, I like to point out the fact that I was born in a place called Ronchi, a godforsaken suburb located in the plain near Bologna, an area which at the time was entirely dedicated to agricultural activities.

I was born in a badly off family that, just like the majority of Italian people at the time, lived in that historical period of extreme poverty and struggles, but also of great opportunities, with pride and dignity.

I believe that those very difficult living conditions, which I perfectly remember, played a key role for the growth and development of the human and professional skills that have always been very useful to me throughout my life.

Why did Marcello Masi choose to be an entrepreneur?

Actually, it was not a well-thought-out choice, but rather a planned combination of ambition and conceit richly spiced with necessary insanity. Beside that the situation on the market was particularly dynamic and stimulating. At the time, almost nothing was available on the market and people were really in need of everything. So, the smartest entrepreneurs founded companies that developed and produced huge wealth. Even the least skilled ones managed to survive. Today, in the so-called Western World, we live in a situation that has completely changed and has certainly become more difficult and complex, so that only the best and strongest can resist and develop.

How would you describe yourself as a man and an entrepreneur?

Having said that I was not born to be an entrepreneur, nor did I inherit the title from my family, I can assert with no doubt that I have always faced challenges at my own risk, getting through good and bad times of my business with passion and commitment. Today, I can say without a doubt or hesitation that I fully consider myself as an entrepreneur, who in recent times has been trying to adapt to an extremely challenging and changeable economic situation.



As a man, even though I do not see myself as a model, I still believe I am a particularly determined and curious person, with all the right characteristics to stay “hungry and foolish”, just as any successful entrepreneur needs to be, today more than ever.

How do you judge the current situation of business in Italy? Do you have any suggestions to make the country get out of today’s crisis?

I do not make any judgment, but I would like to express my personal opinion about this.

First of all, it is absolutely necessary to face the situation with a practical and substantial approach, as usual in a company or even in a family.

Politicians, public administrations and technical experts, whose actions have led or at least contributed to the Italian economic disaster, should have no more right to public declarations nor functions. They should rather resign from their offices. In private-owned companies, employees who are responsible of continuous economic losses are laid-off. A family member who is responsible of high expenses despite a low income cannot be in charge of the family management any more.

In other words, we need to elect new politicians and administrators whose reputation has not been damaged. They must have a totally innovative approach and the courage to change the situation with new ideas. They must be able to understand the present time and make plans for the future, matching what is needed with what is possible.

What is the strategic direction of M.D. Micro Detectors?

In the last three years we have been developing a completely new strategic approach, we have deeply modified our organization and we have implemented a significant investment plan. With these measures, we aim at constantly increasing and developing the business of our company by offering our customers the best technologies, products, productive performances and service.

What do you like the most about today’s M.D.?

Thanks to the important and clear objectives we have set ourselves, our company is the ideal place for those who like to work hard and take up professional challenges. We have been working a lot to create and keep the enthusiasm of our people and their work ethic is certainly higher than average. The high commitment to achieving excellent results, the struggle for perfection and the desire to do a good job: all these values are very important to me and to our CEO, Mr Giacomo Villano, and in our opinion they should be more and more put into practice by M.D. and by all other companies belonging to Finmasi Group.

And what is the destination Finmasi Group is sailing to?

Our Group is investing a lot to maintain and develop industrial activities in Europe as well as to take opportunities in business all over the world. We believe in this and we believe we can do this using the entrepreneurial instinct and initiative, the desire to achieve, the professionalism, the brilliance and wisdom of

the people working with us. We are confident and determined when we think about the future.

What is Marcello Masi’s advice to young people approaching the labour market today or wishing to start a business activity?

My advice is, first of all, to be aware of the situation we are living, from all points of view, without overstating or, even worse, being influenced by the several negative aspects we are confronted with (it would be too easy today!).

In my opinion, you need to face the present situation with a realistic but positive attitude, and always bet that what you are starting will be successful. This is true not just when looking for job, but also for someone who is planning to become an entrepreneur.

I think that, above all, we have to bear in mind that this will not be the end of the world and that, especially when you are young, you can get unlimited opportunities.





M.D. Trainee Program

Building the bridge between education and work

M.D. Micro Detectors M.D. is glad to announce a new structured co-operation with:

- Enrico Fermi Technical Institute of Modena
- Corni Technical Institute of Modena
- Corni Technical Institute of Carpi;
- University of Modena and Reggio Emilia, Department of Engineering Sciences and Methods.

These co-operations range from internships at our factory to guided and/or specific visits to our facilities as well as involving our specialist staff in taking students for lessons. In February 2014, for example, 4 students from different technical schools served an internship in our company. Beside that, these collaborations give students the opportunity to gain work experience.

These relationships are aimed at building an effective and practical connection between the worlds of education and the workplace, enabling students on one hand to work with one of the most respected manufacturers of Electronic components in the region whilst on the other hand creating an opportunity for M.D. to get to know, evaluate and work with potential new candidates to join our company.

We consider our company will become an important springboard as well as a model for those who have a passion or an interest in the world of sensors and Industrial Automation.

We believe M.D. is the right place for those who love professional challenges, who have passion for their job and now more than ever believe that in developing and keeping Italian Manufacturing alive. We all need to win continuous professional challenges through the production of high quality ideas and solutions.

Corni Technical Institute of Modena



Enrico Fermi Technical Institute of Modena



Corni Technical Institute of Carpi



University of Modena and Reggio Emilia, Department of Engineering Sciences and Methods

Do you represent a school or a university and do you want to collaborate with us? Contact us at: info@microdetectors.com



**DO YOU WANT TO PROVE
YOUR TALENT?**



**DO YOU LIKE
CHALLENGES?**



**IS ENTHUSIASM YOUR
VITAL FORCE?**



**DO YOU WANT TO JOIN
A DETERMINED, RESULTS-
ORIENTED TEAM?**



**DO YOU WANT TO
CREATE AN
ENTREPRENEURIAL
SUCCESS STORY?**



**DO YOU LIKE FEELING
ADRENALINE IN YOUR
BODY?**



**ARE YOU BRAVE AND
HARD-WORKING?**



**ARE YOU SOMEBODY WHO
NEVER GIVES UP?**

**THIS MESSAGE IS NOT INTENDED FOR
THOSE WHO BELIEVE THEY JUST HAVE
RIGHTS, WHO SEEK A CALM AND MO-
NOTONOUS LIFE, WHO GET SCARED EA-
SILY, WHO LIKE TO WORK ON THEIR
OWN, WHO LIKE TO SLEEP LONG, WHO
DO NOT HAVE PASSION, IMAGINA-
TION, INITIATIVE NOR WORK ETHIC,
WHO DO NOT WANT TO CHANGE.**

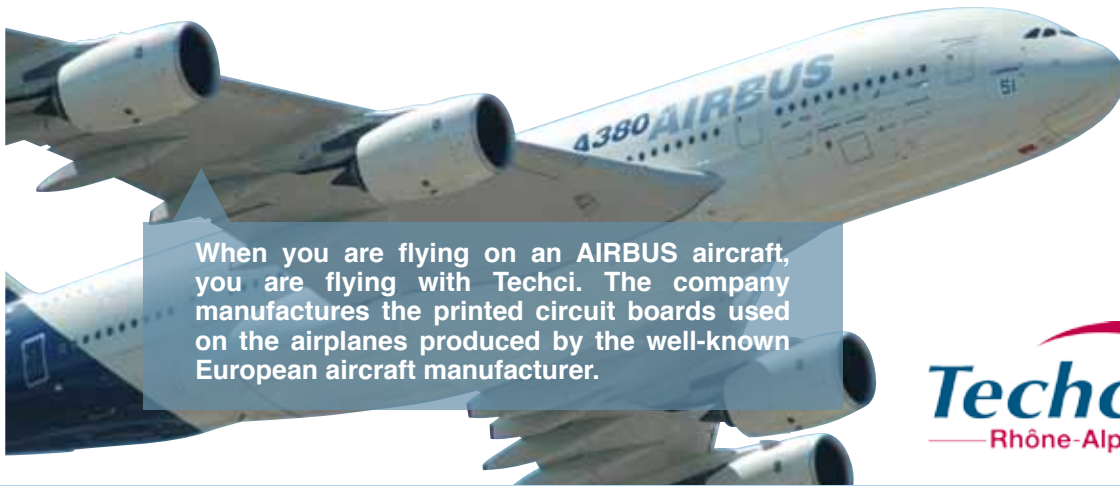


Micro Detectors

Italian Sensors Technology

**IF YOU WANT TO KNOW MORE ABOUT
A COMPANY THAT STRONGLY BELIE-
VES IN THE IMPORTANCE OF INDU-
STRIAL DEVELOPMENT IN ITALY,
THAT IS LOOKING FOR ENTHUSIASTIC
PEOPLE WHO ARE WILLING TO CHAL-
LENGE THEMSELVES, DO NOT HESITATE
TO CONTACT US AT:**

INFO@MICRODETECTORS.COM



When you are flying on an AIRBUS aircraft, you are flying with Techci. The company manufactures the printed circuit boards used on the airplanes produced by the well-known European aircraft manufacturer.

Techci



Techci
— Rhône-Alpes

An example of excellence

High-tech Printed Circuit Boards: Techci Rhône-Alpes

Techci was the last company, in chronological order, to be acquired by Finmasi Group. Since the 1st of September 2011 this company is part of Finmasi Group PCB Division.

Finmasi Group is strongly committed to the PCB sector. A printed circuit board is a fundamental part of any electronic device. With its Italian, French and Chinese subsidiaries, the Group can offer a complete range of solutions to the market: from low-technology to the most complex ones, from small series to big volumes, from quick turnaround prototypes (delivered in 3-5 working days) to scheduled batch-production in any quantity.

The PCB sector shows the effects of globalization very clearly and it is therefore analyzed in universities as a typical case study. Starting from 2001, the manufacturing of low and medium-technology PCBs in big volumes has been moved from Europe and the United States to the Far East. Today, PCB manufacturers can keep their leadership on the European market only if:

- they have strong technological competences and they can produce high-complexity PCBs;
- they can manufacture quick turnaround prototypes;

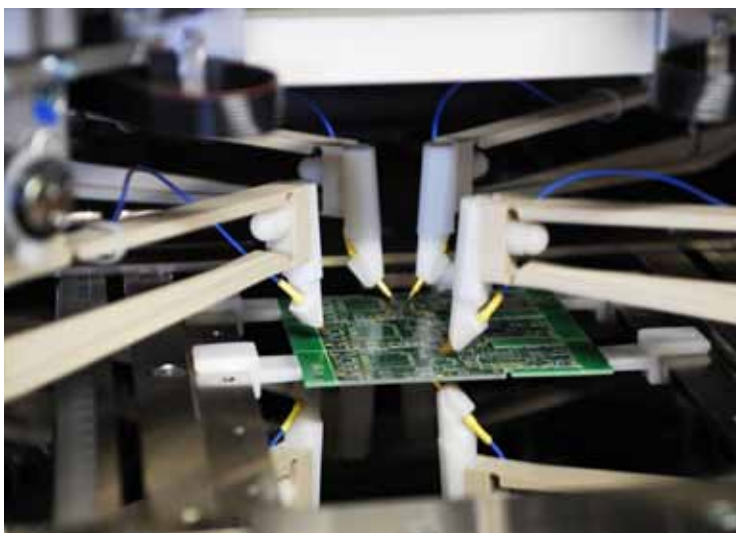
- they guarantee their customers an excellent service;
- they are suppliers of the highly technological electronics industry: space and avionic, military, biomedical, railway sectors and in general the high-technology industrial sectors.

Since always, Techci Rhône-Alpes is known on the market for meeting all these requirements.

Techci was established in 1983 and is based in the French department of Haute Savoie, in Saint-Genix-Sur-Guiers (near Chambéry). A synonym for high technology, Techci is an industrial manufacturing company located in a wonderful natural area at the foot of French Alps. A delightful combination of nature and technology.

The company personnel consists of roughly a hundred people and the production plant has a surface of about 7,500 square meters. The new plant, built in 1992 and enlarged later, has some additional free space available for further enlargements in the future. Turnover was about 12.5 million euros in 2013, thus significantly increased compared to the previous financial year.

Techci boasts a long tradition, an excellent reputation



2013 worldwide production of printed circuit boards

Million dollars	commodity boards	multilayer boards	microvia boards	packaging substrates	flex circuits	total amount
America	427	2,611	190	20	231	3,479
EUROPE	862	1,075	112	4	148	2,201
Japan	411	2,431	731	2,726	1,460	7,759
China	4,440	10,057	4,112	655	3,705	22,969
Asia	1,380	4,125	3,024	4,378	6,169	19,076
Total	7,361	19,894	8,169	7,914	11,713	55,484

and high-level technological competences, acquired over the years. It is organized according to the Lean Thinking principles, with completely controlled and reliable industrial processes, state-of-the-art machines and equipments. The company has a "virtual asset" which cannot be easily reproduced: the know-how of its people, obtained through tens of years spent developing and producing all kinds of printed circuit boards.

That is actually one of the most important strong points of Techci Rhône-Alpes: a team of experts with an excellent technical and professional background that have created an organization and a complete set of industrial processes to provide their customers with the most performing products, services and solutions, thus guaranteeing the best results. In Techci, a lot of people have a strong work ethic and a very high commitment to the company itself and to its future development.

Techci production can be divided into the following product types:

- multi-layer PCBs of all complexity levels (58%);
- flex and rigido-flex (35%);
- PCBs with press-fit holes, heat sink, double-sided through-holes (7%).

Techci is a supplier of the following industrial sectors:

- Avionic (41%);
- Military (25%);
- Industrial (14%);
- Communication, Energy, Nuclear, Research, Biomedical, Railway (20%).

Techci Rhône-Alpes has obtained the following certifications:

- NadCap (National Aerospace and Defense Contractors Accreditation Program)
- ISO 9001:2008;
- EN9100:2009;
- UL94V0;

Techci strong points are:

- Its excellent technical competence, acquired through 31 years of activity in a highly complex technological domain;
- Its reliable and completely stable industrial processes;
- A high level of service;
- A complete range of products for all needs;
- Its organization and team;
- The know-how of its people.

These characteristics, which are an indelible part of the company's DNA, have been enhanced by the synergies created with the Italian sister company Cistelaier S.p.A.. Therefore, our Group can tackle the European market in a synergic and coordinated way and propose a complete range of high-level products.

Finmasi Group PCB Division's approach to the market is based on the so-called "3M-offer":

1. Multi-Product: from double-sided to the most complex multilayer PCBs;
2. Multi-Service: from prototypes to big series' production;
3. Multi-Technology: from standard solutions to high technologies.

Techci Management Team is made of highly competent professionals building a tight-knit and performing group:

- Marcello Masi (President and General Manager);
- Robert Dumonteil (Plant Manager, Technical Manager and Quality Assurance Manager);
- Jean Paul Gallay (Production Manager);
- Thierry Pincemin (Sales and Marketing Manager);
- Richard Taruffi (Purchasing and Methods Manager);
- Lydie Alves (Support Service Manager).

Finmasi Group strongly believes in this Company, in its growth potential and more generally in the strategic project regarding printed circuit boards. Finmasi Group believes that there still are a lot of chances for European manufacturers capable of supplying a complete range of products with a top-quality service. The Group is investing very much at all levels for maintaining and developing its European manufacturing plants, also in France. Techci's success is another tangible evidence proving that the Group believes, in practice and not just in words, in the importance of European industrial development in the future.

Techci Rhône-Alpes S.A.

ZA du Truison - Pré Chabert
73240 – Saint-Genix-sur-Guiers – France
web site: www.techci.fr
Tel +33 (0) 476 31 50 06
Fax +33 (0) 476 31 71 55

DISCOVER THE NEW M.D.



Micro Detectors

Italian Sensors Technology

M.D. Micro Detectors S.p.A.

Strada S. Caterina 235
41122 Modena - Italy

phone + 39 059 420411

fax + 39 059 253973

info@microdetectors.com

www.microdetectors.com

M.D. Micro Detectors S.p.A. has been designing and manufacturing a wide range of industrial sensors since 1971. Our company's strong commitment to future developments and innovations is based on over 40 years of knowledge.

Our product portfolio is the following:

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

Variation and customization of catalogue products are also an important part of our activity, as well as products specifically developed to satisfy our customers' needs. Moreover, we develop innovative solutions for industrial applications using our technology.

Our organization and competences allow us to manufacture our products quickly and with guaranteed results for our customers. Fast deliveries is one of our biggest strengths.

Over 1.3 million pieces are entirely manufactured in our Modena plant. Our Made in Italy production is synonymous for quality, accuracy, experience and reliability.

Since the beginning, our products have been

renowned on the market for their quality, robustness, ease of use and for outstanding performance. This is the result of a manufacturing process carried out at the highest level of capacity, quality, efficiency and flexibility.

All processes, from research and development of new products to manufacturing and final shipment, are carried out by our personnel at our site. This allows us to keep all of our processes completely under control and to be flexible and reactive to customers' needs.

We are organized according to the principles of Lean Thinking. All products manufactured in our plant undergo constant controls and they are always double-checked.

The human and material assets of our Company guarantee the best results and a constant support at all times. Work ethic, customer orientation and continuous improvement, passion and commitment to excellence, search for professional challenges: the professional background of our people is made of this and more.

The quality of M.D. Micro Detectors S.p.A. has also been certified throughout the years: our Quality Management System has been certified ISO 9001:2008 and several products have obtained the CE, ATEX, UL, cULus, Diversey, TÜV and ECOLAB certification.