

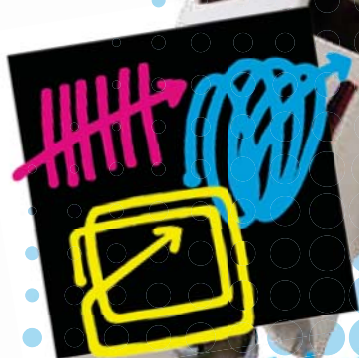
# md<sup>®</sup>news



M.D. Micro Detectors Magazine n°2 - 23/05/2013 - English edition

THE HIGH  
TECHNOLOGY  
ENGINE

M.D. Micro Detectors  
presents the  
new **Ultrasonic,**  
**Capacitive,**  
**Proxy Miniaturized**  
**Sensors,** together with  
the new **Ultrasonic** and  
**Photoelectric Forks!**



sps ipcs drives  
ITALIA

Hall 2 - Booth I003



Micro Detectors

Italian Sensors Technology

# EDITORIAL: THE NEW M.D. MICRO DETECTORS

We are currently living in a Historical Period where all the stuffy effects of the Worldwide Economical Crisis, started in 2008, are defining a New Age. We are facing an Epochal Change. The Economical System developed in the last 20 years is definitely shorting out. The transition time in which we are presently settled is driving us in a new Economical Age where the main features are still not defined.

Considering this big change and all consequent meaningful and concrete Difficulties, our Company decided to face the Future and Its Uncertainties with an Enterprising Spirit and a Long Term Vision. Fearless and Full of Enthusiasm. Starting from the second half of 2011 we performed a real Revolution in our Organization, containing the following Targets :

- Increase of the Efficiency and Performances at all Company Levels;
- Increase of both the Production Capacity and the Productivity;
- Launch of a huge number of new Products;
- Reduction of the «Time to Market » both in the New Products Development and in the Customization of the Existing Products Offer;
- New Technology Development;
- Strengthening of Our Team.

Moreover, M.D. decided to value the Industrial Activity in Italy, investing meaningfully in its own Italian Structure. We want to show not only chatting

but with concrete Facts, that in Europe and in Italy, it is still possible to produce sensors which for Quality, Performances, Efficiency and Service can Compete and Win with all Sensors Producers settled in other Countries where there are significant cost advantages.

We feel really proud of what our People are realizing to reach such a Target. The Excellent Technological Depth of This Company, coming from 42 years of Activity, has been highlighted from the most modern Management and Production Process, and also from the deep Passion and Well-Established Working Culture of our Persons.

For the ones still not knowing us, we believe that the best way to have a clear Picture of our Products, our Capabilities and our Structure is to visit us. To see with their own eyes who we are, what we are doing and how we are performing all this, is the right approach to realize that M.D. Micro Detectors is the right Partner for all Companies believing in Excellence, in Efficiency and in Quality.

The second edition of M.D News is going to introduce you in many News referred to us. Our Organization is full available to show you and better explain in details all what we are summarizing in the following pages.

**Giacomo Villano**  
Chief Executive Officer



# TECTORS

Pag. 4-5

## The lean company

Starting from the second half of 2011, M.D. Micro Detectors has introduced and endorsed the LEAN THINKING concepts, which are presently driving and living in the whole company Organization.

Four  
languages  
available!



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## M.D. Micro Detectors is also on the Chinese market now!

M.D. Micro Detectors incorporated a Chinese Concern M.D. Micro Detectors (Tianjin) Co., Ltd. located in the industrial Seaport of Tianjin, close to Beijing. The company established in 2012, has started all its activities in January 2013.

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## Special: Food & Beverages

Let's focus on our solutions for Food & Beverage

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### New Forks series

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### Since 1971 all solutions you are looking for

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### M30 detecting range up to 6,000 mm: "Best in class"

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### Compact housing, excellent reading performances

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### More capacitive in our family

Pag. 22-23

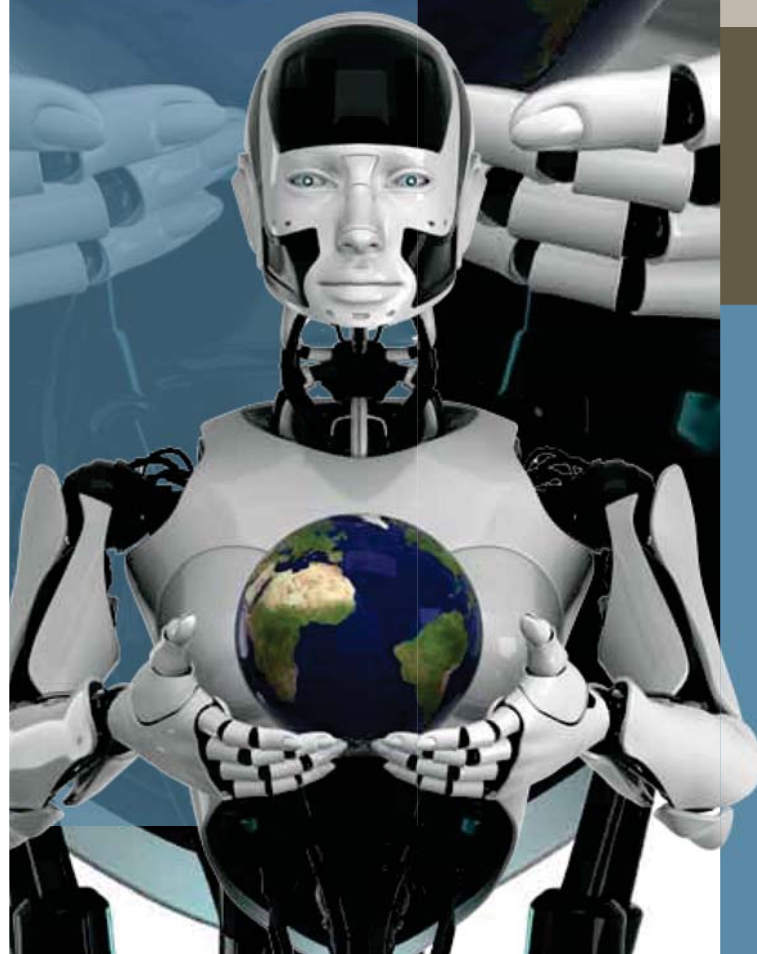
### New generation of miniaturized inductive sensors

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### Vending machines solutions

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### Safety forever!





# THE LEAN COMPANY

Starting from the second half of 2011, M.D. Micro Detectors has introduced and endorsed the Lean Thinking concepts, which are presently driving and living in the whole company Organization.

With Pride, M.D. may say to have a real Lean Working System granting to all its Customers the Highest Service Level and a Production System able to ensure Quantity, Efficiency and total Quality.

M.D. is proud to have a full integrated Process: from the New Products Development to the Customers shipment. With this aim, in the last two years, the main strategical activities have been re-internalized.

With the Lean Thinking Introduction, the Organization and all daily People Behaviours, have been adapted to the constant Application of such Principles:

- Efficiency
- Flow
- Standardization
- Visual Management
- Team Working
- Reduction of all Indirect and "No Value Added" Activities

## Lean in Operations: The Company Heart

Through the complete revised Factory Lay Out, the radical Organization Change and the realization of new Pre Assembly and Assembly lines, M.D. obtained significant results in Efficiency and Production Capacity, Throughput Time Reduction, Rationalization of the available Spaces and of the Working Capital.

## Lean in Research & Development: The Company Brain

Together with the new Products Road Map Activation, something never happened before in the whole Company History, the Lean Principles Application have been enlarged to the Research & Development Area.

Through the revised Organization and the Development Process Improvement, M.D. got important results in the Efficiency Increase and Time to Market Reduction both for the new products Development and the Present Range Customization.

## The Lean Company

Thanks to a proper and, without exaggeration, "definable" Revolution, today M.D. can supply to all Customers the Highest Service and Flexibility level from all points of view.



## The Lean Company

M.D. is proud to have a full integrated Process: From the New Products Development to the Customers shipments. With this aim, in the last two years, the main strategical activities have been re-internalized.



Through the revised Organization and the Development Process Improvement, M.D. got important results in the Efficiency Increase and Time to Market Reduction both for the new products Development and the Present Range Customization.





# M.D. IS ALSO IN THE CHINESE MARKET NOW!

M.D. Micro Detectors incorporated a Chinese Concern M.D. Micro Detectors (Tianjin) Co., Ltd. located in the industrial Seaport of Tianjin, close to Beijing. The company established in 2012, started all its activities in January 2013.

By this Company Establishment, the FinMasi Group Sensor Division aims at the following targets:

- to sell also in the Chinese Market the sensors produced by M.D. Micro Detectors S.p.A, diffusing the Technology and Quality we are developing since 42 years of Activity. The whole M.D. portfolio is now available for the Chinese Market with its own Logistic Center.

- to be an Excellent Reference worldwide coils Producer. Our long Experience in the coils manufacturing for inductive sensors is now available for all market producers needing such a technology.

The FinMasi Group, already in China for eight years, is reinforcing furthermore its Presence in one of the most important Worldwide Industrial Automation Market.



# THE ET

## Welcome M.D. Micro Detectors Tianjin

M.D. Micro Detectors incorporated a Chinese Concern M.D. Micro Detectors (Tianjin) Co., Ltd. located in the industrial Seaport of Tianjin, close to Beijing. The company, established in 2012, started all its activities in January 2013.



One Company's important Target is to be an Excellent Reference worldwide coils Producer. Our long Experience in the coils manufacturing for inductive sensors is now available for all market producers needing such a technology.



# SPECIAL: FOOD & BEVERAGE

Food & Beverage Industry requires parts and systems able to grant an extreme resistance both in the raw material used to manufacture them, and also in the typical harsh conditions where they are normally settled.

M.D. Micro Detectors solutions have been designed to grant a long durability: a complete offer with protection rating of **IP69K according to the DIN 40050 standard**, and **ECOLAB and DIVERSEY certified**.

During the cleaning process very often the pressure washers **use high pressure water jets** of about 100 bar and with temperature which can reach 80°C together with aggressive **detergents and disinfectants**, such as alkaline products and soap containing chlorine.

The M.D. Micro Detectors sensors have been built to work in this harsh application, and their technical features allow not only to **improve the production quality**, but also to **reduce all products scraps**, and **speed up the automatized food industry processes**.

The M.D. Micro Detectors offer is particularly complete and realized through the following products:

- Inductive sensors PF series
- M18 Photoelectric sensors FF series
- Safety Light Grids with Heating Protection LS2 and LS4 series, K and H versions.







## Inductive Sensors PF series

- M12, M18 and Ø17,5 mm versions
- AISI316L Steel Housing (DIN 1.4404)
- Sensitive part in PPS plastic material (FDA certified)
- Shielded and Unshielded models
- Standard and long Distance detecting Range
- up to 2KHz Switching Frequency
- Models available with M12 plug
- IP67, IP68, IP69K Protection degree
- 2 Different temperature working range -40°...+80°C or -25°...+110°C
- ECOLAB and DIVERSEY Certification



## Photoelectric Sensors FF series

- M18x1 mm or Ø17,5 mm Housing
- Axial Optics
- Wide range of available optical functions
- AISI316L Steel Housing (DIN 1.4404)
- Plastic Lenses (FDA certified)
- Inductive Technology Teach-In button (M.D. Micro Detectors patented)
- up to 500Hz Switching Frequency
- Available Models with M12 plug
- IP67, IP68, IP69K Protection Degree
- Temperature range -25°...+80°C
- ECOLAB and DIVERSEY Certification



## Safety Light Grids LS2 e LS4 series, H and K series



- IP69K Protection Degree:
  - K model without Heating System
  - H model with Heating System
- Type 2 and 4
- Finger Protection: 14 mm
- Hand Protection: 30 mm
- Body protection: 2, 3 and 4 beams
- Different working range available
- Working Temperature Range:
  - 0°...+55°C for K model
  - -25°...+55°C for H model



# SPECIAL: FOOD & BEVERAGE

## Safety

### Safety light curtains Type 2 & 4

LS2_K & LS2_H		LS4_K & LS4_H	
			
cylindrical ø 56 mm		cylindrical ø 56 mm	
0...3 / 0...10 m		0...3 / 1...5 m (res. 14 mm); 0...8 / 3...17 m select.	
from 160 up to 1,510 mm		from 160 up to 1,510 mm	
hand, body		fingers, hand, body	
30 mm, 300 mm, 400 mm & 500 mm		14 mm, 30 mm, 300 mm, 400 mm & 500 mm	
depending on height		depending on height	
available functions	automatic restart	•	•
	manual restart	•	•
	EDM	•	•
	integrated connections for muting sensors	—	—
	range reduction	•	•
	extendend range	—	—
	master	—	—
	intermediate slave	—	—
	final slave	—	—
	with passive element	—	—
type		2 (EN 61496-2) SILCL 2 (EN 62061) PL d (EN ISO 13849-1)	4 (EN 61496-2) SILCL 3 (EN 62061) PL e (EN ISO 13849-1)
power supply	Vdc	•	•
	Vac	—	—
output type	2 relays	—	—
	2 PNP	•	•
temperature range		-10°C...+55°C (LS2_K) -25°C...+55°C (LS2_H)	-10°C...+55°C (LS4_K) -25°C...+55°C (LS4_H)
protection degree		IP69K	IP69K
housing material		PMMA, POM-C, stainless steel 316L,*	PMMA, POM-C, stainless steel 316L,*
optic material		PMMA/PAI2	PMMA
output	cable	•	•
	M12 plug, 5 wires	—	—
	M12 plug, 8 wires	—	—
	M23 plug, 19 wires	—	—
ATEX		—	—
other certifications		CE cUL US LISTED TÜV	cUL US LISTED CE TÜV

\*Silicone washers



## Photoelectric Sensors

## Inductive Sensors

### IP69K

#### FF



dimensions	M18
background suppression	30...130 mm 60...100 mm (shiny object)
short distance diffuse	100 mm
long distance diffuse	400 mm / 800 mm
retroreflective	—
polarized	4 m
retroreflective for transparents	100...1.000 mm
through beam	20 m
LASER	—
axial optic	●
90° optic	—
power supply	Vdc Vac
output type	NPN - NO NPN - NC PNP - NO PNP - NC NPN - NO / NC PNP - NO / NC NPN - NO + NC PNP - NO + NC DECOUT® relay SCR
temperature range	-25°C...+80°C
protection degree	IP68/IP69K
housing material	stainless steel AISI316L
front head material	PMMA
output	cable plug pig-tail
ATEX	II3GD
other certifications	Diversey ECOLAB cUL US LISTED CE

dimensions	M12	M18
standard shielded	2 mm	5 mm
standard unshielded	4 mm	8 mm
long distance shielded	4 mm	8 mm
long distance unshielded	8 mm	12 mm
standard housing	●	●
short housing	—	—
miniaturized housing	—	—
power supply	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	-40°C...+80°C -25°C...+110°C	-40°C...+80°C -25°C...+110°C
protection degree	IP68/IP69K	IP68/IP69K
housing material	stainless steel AISI316L	stainless steel AISI316L
front head material	PPS	PPS
output	cable M8 plug M12 plug	— — ●
ATEX	II3GD	II3GD
other certifications	Diversey ECOLAB cUL US LISTED CE	Diversey ECOLAB cUL US LISTED CE

#### PFM & PFM-26



#### PFK & PFK-26



# NEW FORKS SERIES

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**.

New  
catalogue







## Photoelectric Sensors

## Ultrasonic

### Forks

		FC5	New series	FC6I	New series	FC6L	New series	FC7	New series	FC8	New series
											
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		c  US LISTED 				c  US LISTED 		 		c  US LISTED 	

# SINCE 1971 ALL SOLUTIONS YOU ARE LOOKING FOR.

## New BGS version of QM series

New  
model  
QMRS

The QM Photoelectric Family has been enlarged with a new Model **QMRS**, the new **miniaturized cubic Photoelectric sensor with background suppression**. The **QMRS** is a really performing product thanks to the mechanical multiturn trimmer adjustment and to the **1 kHz High switching Frequency** which allows a really precise and stable detection on the object. The particularly visible **RED** emission and the bright **SPOT** extremely defined, make quicker and easier the product installation and alignment procedure. Through the adjusting range from **30 mm** up to **200 mm** this sensor can be fitted in the largest application field. The product is available in the **PNP** and **NPN** configuration with cable output, **4 pins M8 Plug**, pig tail both **M8** and **M12**. The background suppression function through the optical triangulation technology, can detect objects of different colour at the same distance, since it reduces the sensor dependence from the quantity of reflected light of the object.

**12 m and thru beam version** with working distance of **50 m**.

The product has been significantly improved compared to the previous version. Its dimensions, the turning **M12** plug or the pre-wired cable, **make easier any installation in reduced space**. Moreover, the visible **LED** makes still easier the installation process and quicker the sensor set up.

## New BGS version of FAL series

New  
model

The **FAL** Family is now complete with the new **FALS** and **FALW** version, **cylindrical Photoelectric Laser Sensor with Background Suppression**. The product is available both in the axial version and in the radial one. The sensitivity adjustment is possible from **25 to 100 mm** for the **axial Laser Class I**, while for the **Laser Class II** it is from **30 to 150 mm**. For the radial version the adjusting range is from **25 mm to 130 mm**, with **Laser Class II**. Thanks to the real small and focused bright **SPOT** and to the **1,5 kHz** switching frequency, this model grants a real precise and stable detecting performance on the object. The trimmer sensitivity adjustment allows an easy and quick set up phase, making possible the **high speed small object** detection.

The sensor is available both in **NPN/PNP version**, and **complementary outputs**.

## FG series Improved performances

Im-  
proved  
model

A further innovation in the Photoelectric Family is the **new version of the cubic FG sensor type with improved performances**. The **FG** Photoelectric series has **2 different background suppression versions** types with different working range which can reach up to **600 mm**, a **polarized retroreflective** up to



## Photoelectric Sensors

### Cubic

### Cylindrical

QMRS

New model



FG

Im-proved model



FALW-1

New model



FALW-3

New model



dimensions		21x12.8x31.2 mm	20x43x65 mm	M18	M18
background suppression		30...200 mm	90...310 mm 110...600 mm	25...100 mm <sup>(1)</sup> 30...150 mm <sup>(2)</sup>	25...130 mm
diffuse short distance		100 mm	—	—	—
diffuse long distance		400 mm / 1,000 mm	—	—	—
retroreflective		—	—	—	—
polarized		5 m	12 m	—	—
retroreflective for transparents		0.4... 4 m 0.05... 1.5 m	—	—	—
LASER		—	—	<sup>(1)</sup> class 1; <sup>(2)</sup> class 2	class 2
axial optic		—	—	•	—
90° optic		•	•	—	•
switching frequency		1 kHz / 2 kHz	—	1.5 kHz	1.5 kHz
emission		red	red	red	red
power supply	Vdc	•	•	•	•
	Vac	—	•	—	—
output type	NPN - NO	—	—	—	—
	NPN - NC	—	—	—	—
	PNP - NO	—	—	—	—
	PNP - NC	—	—	—	—
	NPN - NO / NC	•	•	—	—
	PNP - NO / NC	•	•	—	—
	NPN - NO + NC	—	—	•	•
	PNP - NO + NC	—	—	•	•
	DECOU <sup>T</sup>	—	—	—	—
	relay	—	•	—	—
	SCR	—	—	—	—
temperature range		-25°C...+70°C	-25°C...+55°C	-15°C...+55°C	-15°C...+55°C
protection degree		IP67	IP67	IP67	IP67
housing material		plastic	plastic	nickel - brass	nickel - brass
active head material		PMMA	PMMA	PMMA	PMMA
output	M12	M12 pig-tail	•	•	•
	cable	•	•	—	—
	M8	•	—	—	—
	M8 pig-tail	•	—	—	—
ATEX		—	—	•	•
other certifications					

# M30 DETECTING RANGE UP TO 6.000 MM "BEST IN CLASS"

M.D. Micro Detectors is glad to announce the introduction on the Market of 2 new families of ultrasonic sensor in the **M30 housing: UT1D and UT1F**. The Ultrasonic sensors portfolio becomes even more complete and competitive

**UT1D family sensors**, working from **200 mm** up to **4.300 mm**, are characterized by the high working range, offering the widest operating distance normally reachable by products with bigger dimensions and higher costs. Moreover they can grant their perfect functioning with an extremely reduced blind zone.

The really compact plastic body, only **89.5 mm**, makes possible the installation in really reduced spaces.

**UT1F Family sensors**, with plastic body in **90 mm** dimension, included the large front part, are the most compact sensors present on the Market which can reach a working detecting distance of about **6 m**.

Both families have a **12 V** minimum power supply which allows battery application, as for example, agricultural machinery.

**UT1D and UT1F** models are supplied with a new SW extremely complete and performing which allows different operating and functional modes selectable by the **Set Teach In button**.

This feature grants a cost optimization in stock management and also a part number reduction thanks to its multifunctionality.

The double digital output model, for example, reduces in 1 only part number 3 different functionalities/outputs:

- Adjustable hysteresis function fittable in all level control applications
- Window Mode
- Complementary outputs.

The Synchronization function makes possible the installation of the sensor one close to the others avoiding any interference, and ensuring an easier installation, and increasing the efficiency and the production reliability of any application.










Three **LEDs** available, visible through the transparent plug, indicate the output states, the adjusting procedure (**orange Led**) and ECHO (**green Led**), really useful for the sensor alignment on the detectable object.

All **UT1D and UT1F series models** are completely filled in with resin and with IP67 protection degree, allowing the use also in high vibrating application fields.



## Ultrasonic Sensors

### M30

UT1B	UT1D <span>New series</span>	UT1F <span>New series</span>
		
M30	M30	M30
250...3,500 mm	200...4,300 mm	300...6,000 mm
—	—	—
—	—	—
•	•	•
—	—	—
—	—	—
—	—	—
Teach-in button	—	—
Teach-in button	—	—
Teach-in button	—	—
Teach-in button	—	—
—	Teach-in button	Teach-in button
Teach-in button	Teach-in button	Teach-in button
Teach-in button	Teach-in button	Teach-in button
Teach-in button	Teach-in button	Teach-in button
-20°C...+70°C	-20°C...+70°C	-20°C...+70°C
IP67	IP67	IP67
PBT	PBT	PBT
epoxy glass resin	epoxy glass resin	epoxy glass resin
•	•	•
•	•	•
—	—	—
—	—	—
 US LISTED 	 US LISTED 	 US LISTED 

dimensions

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

PNP - NO / NC

NPN - NO / NC

0...10 V

4...20 mA

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

1 x PNP - NO / NC + 4...20 mA

1 x NPN - NO / NC + 4...20 mA

temperature range

protection degree

housing material

front-end material

output

cable

M12 plug

M12 pig-tail

ATEX

other certifications

# COMPACT HOUSING EXCELLENT REFLECTION PERFORMANCE

M.D. Micro Detectors, with a view to its continuous ultrasonic sensors portfolio update, is glad to introduce a further enlargement in the UK6 short body sensors range, through the **new UK6A family** and **the new single analog output and NPN models**.

The **UK6A** series is characterized by an **extremely short blind zone** of only **30 mm** and a switching frequency of **40 Hz**, which allows its use in application typically needing photoelectric technology such as **packaging** and **bottling**.

The **currently series UK6B and UK6C** improve their performances reducing the blind zone from **100 to 80 mm** for the **“B”** models and from **150 to 100 mm** for the **“C”** models, keeping the same maximum operating distances.

The analog outputs **4-20 mA** and **0-10 V** together with the single **NPN** digital output models complete the offer of the **UK6** family allowing to perform detection but also measurement applications such as powders or liquids level control, independently from the color of the material to be detected.

**All the UK6 models can provide both the “single point” function** (i.e. background suppression function mode) and the **“window” one** depending on the setting performed; it is also possible to reverse the analog output slope and, on the models with digital output, to configure the

**output status NO or NC**; the scalability of the working range improves the resolution of the analog outputs performing really accurate measures. Two highly visible indicator LEDs placed on the back of the body, through the transparent M12 plug, display information about the output status (orange LED) and about the level of the echo signal received (green LED), moreover, also the threaded part of the housing has been increased: starting from a **total plastic body length of 43.8 mm**, the threaded part reaches now **38.3 mm** for an optimal mounting.

The introduction of the cable models in addition to the **M12 4 poles** connector ones, make the **UK6** ultrasonic sensor family one of the most complete ultrasonic series with short body on the Market.

The **UK6** models are completely filled in with resin and provide an **IP67** mechanical protection, allowing their use in high vibration applications; UK6 items are **cULus** approved (connector exit).

New  
Application  
Note










Application  
Note







New:  
cable  
models  
available

Ultrasonic Sensors			
M18 - short housing			
UK6A	UK6B	UK6C	
 New cULus series New: reduced blind zone	 New models	 New models	
M18 - short housing	M18 - short housing	M18 - short housing	
30...300 mm	80...300 mm	100...900 mm	
—	—	—	
—	—	—	
●	●	●	
—	—	—	
—	—	—	
—	—	—	
—	—	—	
—	—	—	
Teach-in cable	Teach-in cable	Teach-in cable	
Teach-in cable	Teach-in cable	Teach-in cable	
Teach-in cable	Teach-in cable	Teach-in cable	
—	—	—	
—	—	—	
—	—	—	
-20°C...+60°C	-20°C...+60°C	-20°C...+60°C	
IP67	IP67	IP67	
PBT	PBT	PBT	
epoxy glass resin	epoxy glass resin	epoxy glass resin	
●	●	●	
●	●	●	
—	—	—	
—	—	—	
 	 	 	

# MORE CAPACITIVE IN OUR FAMILY!

M.D. Micro Detectors, aiming to a continuous development of the Proximity Sensor range, introduces the **new C18 and C30 series** that is **M18 and M30 Capacitive Sensors** which complete the present range.

The M18 version is comprehensive of shielded models with working range 3...8 mm and unshielded models with working range 3...12 mm, available with PNP or NPN output -NO+NC and cable connection or 4 pins M12 plug in version.

Furthermore we have available DC models 10...40 Vdc and AC models 20...250 Vac with NO or NC output.

The M30 version is comprehensive of models with plastic or stainless steel housing with working range 2...16 mm for the shielded models and 4...25 mm for the unshielded models. The output is NPN or PNP - NO or NC for Vcc models and NO/NC for Vca models.

New models are also available with **rectangular flat body CQ50 and CQ55 series**.

One of the main feature is also the extremely compact body **7x30x50 mm** for the CQ50 series with a working range from 5 mm up to 10 mm; while the CQ55 body is 15x35x57.5 mm with a working range of 4...25 mm.

The CQ50 series is only available with cable exit PNP or NPN version NO or NC function while **CQ55 series is available both with cable exit and 4 pins M12 plug, PNP or NPN version with selectable NO+NC outputs.**

New Capacitive Sensors catalogue

Application Note

Application Note

Application Note

Application Note

Application Note





## Proximity Sensors

### Cylindrical

C18

New series



M18

C30

New series



M30

## Proximity Sensors

### Cubic

CQ50

New series



7 x 30 x 50 mm

CQ55

New series



15 x 35 x 55 mm

dimensions

standard shielded

standard unshielded

long distance shielded

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

DECOU<sup>®</sup>

SCR

0...10 V

4...20 mA

temperature range

protection degree

housing material

active head material

output

cable

M8 plug

M12 plug

ATEX

other certifications

3...8 mm

3...12 mm

—

—

•

—

—

•

•

—

—

—

—

•

•

—

•

—

—

-25°C...+80°C

IP67

PE

UL US LISTED CE

2...16 mm

4...25 mm

—

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•

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•

•

—

—

—

—

•

•

—

•

—

-25°C...+80°C

IP67

PE / stainless steel

UL US LISTED CE

—

—

5/6/7/10 mm

—

•

—

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•

—

•

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—

-0°C...+60°C

IP67

noryl

noryl

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—

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CE

—

—

4...25 mm

—

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-25°C...+80°C

IP67

PC

PC

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UL US LISTED CE

# NEW GENERATION OF MINIATURIZED INDUCTIVE 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

Applications:













- Robotics
- Metal Working Machines
- Textile
- Packaging
- Production processes

The new miniaturized inductive series will be available for sales in June 2013.



## Proximity Sensors

### Miniaturized

AC1	New series	AD1	New series	AES	New series	AHS	New series
							
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	 	 	 	 			

# VENDING MACHINES SOLUTIONS

M.D. Micro Detectors, a constant reference for the development and production of detection light grids, provides the **NX** and **CST539** series, **Area Sensors** specifically developed for the **Vending Machines Market**.

The **NX** model, mounted inside the automatic dispenser drawer (emitter and receiver units are placed on the drawer edges), is used to detect any types of objects such as snacks, cigarette packs, DVD, bottles and generally it can detect objects smaller than **Ø 5 mm into a working range of 2 meters**.

No housing and radial optics allow product installation even in the smallest and most uncomfortable places of the machine. The versions with the anti-moisture treatment (a protective layer applied on the product), are the most suitable solution for vending machines usually equipped with an internal refrigerator, since they avoid functioning problems due to the condensation normally created from the opened cover.

The **CST539** model is specifically designed for the falling objects detection (from the storage position to the automatic dispenser drawer) and to cover the most demanding installation conditions, such as misalignment between emitter and receiver units, or in case of dirty lenses caused, for example, by the breaking of bottles inside the vending machine.

A green LED placed on the receiver unit side displays received signal level while yellow LED on receiver front side displays the output status, which indicates the objects falling inside the automatic dispenser drawer. Thanks to them a quick and efficient barrier diagnostic can be performed.

Other available functions are the following:

- displaying of blocked products on the anti-intrusion blade of the drawer
- anti-intrusion function to avoid product theft

Emitter and Receiver units are supplied pre-wired to simplify and speed up the mounting on the machine.

Both solutions guarantee high function reliability and reduce the maintenance activities of the reading system.

Datasheet







## Area Sensors

### Special

NX

CST539-L and  
CST539-S



dimensions		41x18x140...157 mm	24.3x1.7x203.2 mm
sensing distance		0,37...2 m	420 mm (CST539-S) 530 mm (CST539-L)
controlled area height		from 132 mm to 150 mm	180 mm
minimum detectable object		up to ø 5 mm	up to 10x10 mm (CST539-S) up to 11x11 mm (CST539-L)
number of optics		14 / 16	16
optics step		10 mm	10 mm min. / 14 mm max
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...+55°C	2°C...+42°C
protection degree		undefined	IP67
housing material		without housing	crystal polystyrole
head material		no optics	crystal polystyrole
output	cable	—	●
	M12 plug	—	—
	MOLEX 22-05-7048	●	—
ATEX		—	—
other certifications		CE*	CE*

## Solutions for soft ice cream or yogurt dispenser machines

M.D. Micro Detectors offers several solutions for soft ice cream or yogurt dispenser machines.

Photoelectric sensors properly installed are used to **identify the operator's hand in order to activate the compressor**. This solution allows the system to save time, performing a precise dispensing without waste or machine malfunctions. Some models uses the **Photoelectric Sensors FAR2 series**, guaranteeing an accurate and reliable detection of the operator's hand.



\*CE certification, to get together with the machine

# SAFETY FOREVER!

M.D. Micro Detectors, as a continuous updating of its product range, is glad to inform you about the introduction of **three new safety light curtains series, each one equipped with an integrated control unit: LS2, LS4 and LP4 type.**

**LS2 and LS4 series, respectively Type 2 (SIL 2 SILCL 2 PL d) and Type 4 (SIL 3 SILCL 3 PL e), are characterized by a short body and by absence of dead zone on one of the two sides**, so they can guarantee a 40 mm resolution in case of angular installations of 30 mm and 40 mm resolution models.

**LS2 series is available in hand protection version (30 mm), presence check version (50 mm and 90 mm) and also in access control version (2,3 and 4 beams)**, with 1,500 mm maximum controlled height and operating distance up to 12 m.

**LS4 series offers also finger protection models (14 mm) and a 20 m improved operating distance**, in addition to all LS2 series resolutions and to 12 m standard range.

Moreover, thanks to the master/slave (up to 2 slaves) configuration option, it grants a **bigger flexibility installation, easily fitting on the machine structure through a quick cable connection.**

Even for an easier and quicker installation and setting up process, LS2 and LS4 have been equipped with an **anti-interference function**, which allows the selection of two different ranges through cable. Such a system avoids any mutual interference trouble between devices.

**Type 4 (SIL 3 SILCL 3 PL e) LP4 series with bigger body** is typically used in **palletizers and material handling applications thanks to its integrated Muting function which allows to connect up to 4 muting sensors** (single and double directions). Both hand protection and access control up to 60 m range and a maximum protected height up to 1,800 mm are available.

LP4 reflective models with passive element, are the right solution for the customers, since they reduce and speed up the cabling phase and they can be installed in reduced spaces where power supply cable installation is usually difficult.

LP4 models are available both with and without muting function, and also with override function. Models with 2,3,4 beams and 6 m maximum operative distance are also available with passive element.

**All series are TÜV SUD and cULus certified.**





## Safety

# Safety light curtains Type 2 and Type 4

		LS2	LS4	LP4ER & LP4ER_M	LP4PF	LP4PT
dimensions						
		28x30 mm	28x30 mm	50x60 mm	50x60 mm	50x60 mm
sensing distance		0...4/0...12 m select.	0...3/1...6 m sel. (14 mm res.); 0...4/0...12 m and 0...10/3...20 m select.	0...6/1...16 m select.; 8...30/18...60 m select.;	0...6 m	0...6 m
controlled area height		from 160 up to 1,510 mm	from 160 up to 1,510 mm	510 mm, 610 mm, 810 mm, 910 mm, 1,210 mm (LP4ER) from 310 up to 1,810 mm (LP4ER_M)	510 mm, 810 mm, 910 mm	510 mm, 810 mm, 910 mm
protection		hand, body, access	finger, hand, body, access	LP4ER: hand, access LP4ER_M: hand, body, access	access	access
resolution		30 mm, 40 mm, 50 mm, 90 mm, 300 mm, 400 mm and 500 mm	14 mm, 20 mm, 30 mm, 40 mm, 50 mm, 90 mm, 300 mm, 400 mm and 500 mm	LP4ER: 40 mm, 2, 3 e 4 raggi LP4ER_M: 30 mm, 40 mm, 90 mm, 300 mm, 400 mm and 500 mm	300, 400, 500 mm	300, 400, 500 mm
beams number		depending on height	depending on height	depending on height	2, 3 and 4 beams	2, 3 and 4 beams
available functions	automatic restart	●	●	●	●	●
	manual restart	●	●	●	●	●
	EDM	●	●	●	●	●
	integrated connections for muting sensors	—	—	only LP4ER_M	—	●
	sensitivity adjustment	●	●	●	—	—
	extended range	—	●	●	—	—
	master	●	●	—	—	—
	intermediate slave	●	●	—	—	—
	final slave	●	●	—	—	—
type	with passive element	—	—	—	●	●
		2 (EN 61496-2) SILCL 2 (EN 62061) PL d (EN ISO 13849 -1)	4 (EN 61496-2) SILCL 3 (EN 62061) PL e (EN ISO 13849 -1)	4 (EN 61496-2) SILCL 3 (EN 62061) PL e (EN ISO 13849 -1)	4 (EN 61496-2) SILCL 3 (EN 62061) PL e (EN ISO 13849 -1)	4 (EN 61496-2) SILCL 3 (EN 62061) PL e (EN ISO 13849 -1)
power supply	Vdc	●	●	●	●	●
	Vac	—	—	—	—	—
output type	2 relays	—	—	—	—	—
	2 PNP	●	●	●	●	●
temperature range		-10°C...+55°C	-10°C...+55°C	-10°C...+55°C	-10°C...+55°C	-10°C...+55°C
protection degree		IP67	IP67	IP65	IP65	IP65
housing material		aluminium	aluminium	aluminium	aluminium	aluminium
optic material		PMMA	PMMA	PMMA	PMMA	PMMA
output	cable	—	—	—	—	—
	M12 plug, 5 wires	emitter and master/slave	emitter and master/slave	emitter (LP4ER), emitter and muting sensors (male, LP4ER_M)	—	muting sensors (male)
	M12 plug, 8 wires	single receiver and master	single receiver and master	—	active element	—
	M23 plugs, 19 wires	—	—	receiver	—	active element
ATEX		—	—	—	—	—
other certifications		  	  	  	  	  

# 42 YEARS OF SUCCESS

  
**Micro Detectors**  
Italian Sensors Technology



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

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 synonymous of **technology, quality, reliability, continuity, service and innovation**.

It will be enough, just to reinforce the idea of innovation leading 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

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

Therefore, the very high 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**.

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

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We will also attend the  
German SPS event in  
Nuremberg from 26<sup>th</sup> to 28<sup>th</sup>  
November 2013

**ENJOY OUR  
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