CARLO GAVAZZI
Automation Components

CARLO GAVAZZI

Capacitive Proximity Sensors

Protection Against:

- Electrostatic discharge
- Burst
- Airborne RF
- Wire-conducted noise
- High energy transients

TRIPLESHIELD™

Ø18

M12

M18

M30

Flat pack

Ø32

The New Generation of Intelligent

The new generation of intelligent capacitive sensors, combined with the innovative Tripleshield™ technology, have the features that will lead the way for the capacitive technology of the future: One capacitive sensor – thousands of applications. Like all previous generations of the patented Tripleshield™ series, the highest levels of protection against electrostatic discharge (ESD), RF and wire conducted noise, surges, and transient voltages are present. The new generation is designed with the newest microprocessor-based technology, allowing the flexibility for any features that may be required, including timing functions, filters, pulsed outputs, and even logical expressions. With all of the features available, there is no limit to applications that can be solved. CARLO GAVAZZI Tripleshield™ capacitive sensors – the capacitive leader for the 21st century.

Teach-in

The single most important new feature is the innovative teach-in function. The user now has complete control over the sensing range, foreground detection, background detection, and hysteresis. With the simple push of a button, the user can program the sensors to detect virtually any material, whether directly or indirectly (i.e. detecting material inside of a container). The user can also program the sensor to ignore certain materials! All of these features can be programmed remotely via a remote teach wire, so it is possible to program the sensor from another location! Additionally, a self-teach unit is available, that automatically sets sensitivity levels when power is applied, offering a true tamper-proof design.

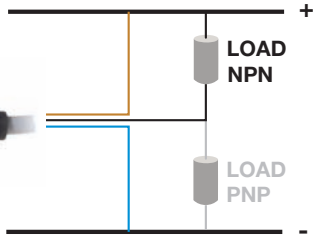
Humidity Compensation Technology

Advanced humidity compensation technology allows the sensor to continually monitor and compensate for condensation on the face of the non-flush mounted sensor – guaranteeing accurate, consistent sensing!

Dirt and Moisture Compensation

Since most sensing environments are far from perfect or clean, the possibility exists that the sensor will be exposed to dirt and moisture, which could accumulate on the face of the sensor. With standard capacitive sensors, this could lead to false detection outputs, causing great inconvenience to the machine operator, through repeated false outputs and sensitivity adjustments. With this new generation of the Tripleshield™, we have incorporated dirt and moisture compensation technology, so the sensor will automatically adjust itself to changing levels of dirt and moisture accumulation on the sensing face, meaning more productivity for the user!

NPN or PNP and NO or NC



The new generation Tripleshield™ sensors will now automatically detect the circuit type and adjust themselves to accommodate either an NPN or PNP load. Furthermore, the output configuration (NC or NO) can easily be selected using the push-button, meaning set up is greatly simplified!

Capacitive Sensors

Sensing Distance

Sensing ranges have been dramatically increased with the new generation of the Tripleshield™.

M12

Flush mount – *4mm*
Non-flush mount – *8mm*

M18

Flush mount – *8mm*
Non-flush mount – *12mm*

M30

Flush mount – *16mm*
Non-flush mount – *30mm*

TRIPLESHIELD™
The Ultimate in Sensor Protection

Thanks to the revolutionary technology from Carlo Gavazzi, the Tripleshield™ sensors are protected against disturbances caused by high levels of electrostatic discharge (ESD) up to 40 kV. The Tripleshield™ technology also protects the sensor against noise from inverters, mobile phones, wire conducted noise, surge and contactor noise. This high level of protection assures that the Tripleshield™ sensors will operate continuously and reliably in the most difficult of environments, where most sensors would fail.

Test	Standard	Product Standard EN 60947-5-2	Generic Immunity Standard Industrial Environment EN 50082-2	Carlo Gavazzi Tripleshield™ Sensor Protection
ESD	EN 61000-4-2 (IEC 1000-4-2)	4 kV cd/8 kV ad[1])	4 kV cd/8 kV ad[1])	**Up to 40 kV cd/ad[1])**
RF Radiated	EN 61000-4-3 (IEC 1000-4-3)	3 V/m 80 - 1000 MHz	10 V/m 80 - 1000 MHz	**> 15 V/m**
Burst	EN 61000-4-4 (IEC 1000-4-4)	1 kV	2 kV	**Up to 4 kV**
RF Wire Conducted	EN 61000-4-6 (IEC 1000-4-6)	—	10 V/m 0.15 - 80 MHz	**> 10 Vrms[2])**
Surge	IEC 255-5	1 kV, 500 ohm	—	**2.5 kV, 500 ohm**

1) cd = contact discharge
ad = air discharge
2) For grounded metal housing. For other types: > 5 Vrms

3-Wire, 10-40 VDC

- *TRIPLESHIELD™* protection
- **TEACH-IN** function
- Remote setup through fourth wire
- Alarm output
- Automatic dirt and moisture compensation
- Humidity compensation circuit
- Automatic detection of NPN or PNP load
- Selectable make or break switching
- Thermoplastic polyester housing
- Plug or cable versions
- Ideal for the plastics, chemical, wood, ceramics, glass and packaging industries

4-wire, 10-40 VDC

- *TRIPLESHIELD™* protection
- Adjustable sensing distance
- Selectable make and break switching
- Flush or non-flush types
- Thermoplastic polyester or stainless steel housing
- Plug or cable versions
- Ideal for the plastics, chemical, wood, ceramics, glass and packaging industries

4-wire, 10-40 VDC

- *TRIPLESHIELD™* protection
- Adjustable sensing distance
- Selectable make and break switching
- Teflon, PVC or Polypropylene housing
- Ideal for the chemical, semiconductor and food & beverage industries

2-wire, 20-250 VAC

- *TRIPLESHIELD™* protection
- Adjustable sensing distance
- SCR output
- Selectable make or break switching
- Flush or non-flush types
- Thermoplastic polyester or stainless steel housing
- Plug or cable versions
- Ideal for the chemical, semiconductor and food & beverage industries

Ø18
M18
M30
Ø32

2-wire, 20-250 VAC/DC

- *TRIPLESHIELD™* protection
- Adjustable sensing distance
- Humidity compensation circuit
- Power MOSFET output
- Selectable make or break switching
- Flush or non-flush types
- Thermoplastic polyester housing
- Plug or cable versions
- Ideal for the plastics, chemical, wood, ceramics, glass and packaging industries

M30

3 or 4-wire, 10-40 VDC

- *TRIPLESHIELD™* protection
- Adjustable sensing distance
- Humidity compensation circuit
  (in models with the Teach-in function)
- Selectable make and/or break switching
- Thermoplastic polyester housing
- Plug or cable versions
- Ideal for the plastics, chemical, wood, ceramics, glass and packaging industries

Flat Packs

Advantages of Capacitive Sensors

Capacitive sensors detect all conductive and non-conductive materials, such as water, glass, plastics, and metals – without physical contact. Adjustable sensitivity makes it possible to "tune out" mounting hardware or intermediate barrier materials.

Typical Applications

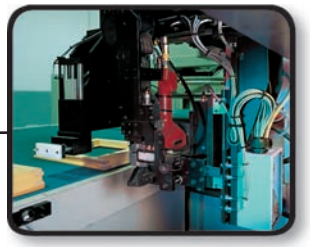
- Grain and plastic pellet detection
- Small parts detection and counting
- Liquid level detection
- Detecting or counting objects
- Paper or plastic strip detection
- Moisture and wet area detection
- Level control in non-metallic containers
- Level control/monitoring through a sight glass
- Presence and thickness of lumber
- Detecting or counting small plastic or metal parts moving through a tube

Plastics Industry

- Dryers
- Vacuum Systems
- Hopper Level Control
- Conveyor Systems

Agriculture

- Grain Silos
- Automatic Feeding Systems
- Irrigation Systems



Wood Industry

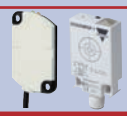
- Window and Door Framing
- Sawdust/Wood Chip Level Control
- Wood Pallet Production

Material Handling and Conveyor Industry

- Wooden Pallet Detection on Conveyors
- Package Inspection
- Level Control for Filling Lines

Food and Beverage

- Level Detection in Bottles and Packages
- Position Control of Packaging
- Pallet Detection

Type number	Type	Output	Supply voltage	Connection		Sensing distance
Thermoplastic polyester housing						
CA18CLF08NA (M1)	4-wire DC	NPN - NO/NC	10-40 VDC	Cable (or Plug M12)		3-8mm Flush
CA18CLF08PA (M1)	4-wire DC	PNP - NO/NC	10-40 VDC	Cable (or Plug M12)		
CA18CLN12NA (M1)	4-wire DC	NPN - NO/NC	10-40 VDC	Cable (or Plug M12)		3-12mm Non-flush
CA18CLN12PA (M1)	4-wire DC	PNP - NO/NC	10-40 VDC	Cable (or Plug M12)		
CB18CLN12NA	4-wire DC	NPN - NO/NC	10-40 VDC	Cable		
CB18CLN12PA	4-wire DC	PNP - NO/NC	10-40 VDC	Cable		
EC3016NPAPL (-1)	4-wire DC	NPN - NO/NC	10-40 VDC	Cable (or Plug M12)		2-16 mm Flush
EC3016PPAPL (-1)	4-wire DC	PNP - NO/NC	10-40 VDC	Cable (or Plug M12)		
EC3025NPAPL (-1)	4-wire DC	NPN - NO/NC	10-40 VDC	Cable (or Plug M12)		4-25 mm Non-flush
EC3025PPAPL (-1)	4-wire DC	PNP - NO/NC	10-40 VDC	Cable (or Plug M12)		
CA18CLF08TC (M6)	2-wire AC	SCR - NC	20-250 VAC	Cable (or Plug M12)		3-8mm Flush
CA18CLF08TO (M6)	2-wire AC	SCR - NO	20-250 VAC	Cable (or Plug M12)		
CA18CLN12TC (M6)	2-wire AC	SCR - NC	20-250 VAC	Cable (or Plug M12)		3-12mm Non-flush
CA18CLN12TO (M6)	2-wire AC	SCR - NO	20-250 VAC	Cable (or Plug M12)		
CB18CLN12TOFT	2-wire AC w/timer	SCR - NO	20-250 VAC	Cable		
CB18CLN12TCFT	2-wire AC w/timer	SCR - NO	20-250 VAC	Cable		
EC3016TBAPL (-6)	2-wire AC	SCR - NO/NC	20-250 VAC	Cable (or Plug M12)		2-16 mm Flush
EC3025TBAPL (-6)	2-wire AC	SCR - NO/NC	20-250 VAC	Cable (or Plug M12)		4-25 mm Non-flush
CA30CLF16CP (M6)	2-wire AC/DC	Power MOSFET - NO/NC	20-250 VAC/DC	Cable (or Plug M12)		2-16mm Flush
CA30CLN25CP (M6)	2-wire AC/DC	Power MOSFET - NO/NC	20-250 VAC/DC	Cable (or Plug M12)		2-25mm Non-flush
CB32CLN20TO	2-wire AC	SCR - NO	20-250 VAC/DC	Cable		2-20mm Non-flush
CB32CLN20TOFT	2-wire AC w/timer	SCR - NO	20-250 VAC/DC	Cable		2-20mm Non-flush
CB32CLN20TC	2-wire AC	SCR - NC	20-250 VAC/DC	Cable		2-20mm Non-flush
CB32CLN20TCFT	2-wire AC w/timer	SCR - NC	20-250 VAC/DC	Cable		2-20mm Non-flush
CA12CLC08BP (M1)	**Teach-in**	NPN/PNP - NO/NC	10-40VDC	Cable (or Plug M12)		0.5-8mm Flush
CA18CLC12BP (M1)	**Teach-in**	NPN/PNP - NO/NC	10-40 VDC	Cable (or Plug M12)		0.5-12mm Flush
CA18CLL12BP (M1)	**Teach-in**	NPN/PNP - NO/NC	10-40 VDC	Cable (or Plug M12)		
CA30CLC30BP (M1)	**Teach-in**	NPN/PNP - NO/NC	10-40 VDC	Cable (or Plug M12)		0.5-30mm Flush
CA30CLL30BP (M1)	**Teach-in**	NPN/PNP - NO/NC	10-40 VDC	Cable (or Plug M12)		0.5-30mm Flush
CA30CLN25BP (M1)	**Self-teach**	NPN/PNP - NO/NC	10-40 VDC	Cable (or Plug M12)		0.5-25mm Non-Flush
CD46CNC10BP	**Teach-in**	NPN/PNP - NO/NC	10-40 VDC	Cable (or Plug M12)		0.5-10mm Flush
EC5525NPAP (-1)	Flat pack	NPN - NO/NC	10-40 VDC	Cable (or Plug M12)		4-25 mm Universal flush
EC5525PPAP (-1)	Flat pack	PNP - NO/NC	10-40 VDC	Cable (or Plug M12)		and non-flush
Stainless steel housing						
EC3016NPASL (-1)	4-wire DC	NPN - NO/NC	10-40 VDC	Cable (or Plug M12)		2-16 mm Flush
EC3016PPASL (-1)	4-wire DC	PNP - NO/NC	10-40 VDC	Cable (or Plug M12)		
EC3025NPASL (-1)	4-wire DC	NPN - NO/NC	10-40 VDC	Cable (or Plug M12)		4-25 mm Non-flush
EC3025PPASL (-1)	4-wire DC	PNP - NO/NC	10-40 VDC	Cable (or Plug M12)		
EC3016TBASL (-6)	2-wire AC	SCR - NO/NC	20-250 VAC	Cable (or Plug M12)		2-16 mm Flush
EC3025TBASL (-6)	2-wire AC	SCR - NO/NC	20-250 VAC	Cable (or Plug M12)		4-25 mm Non-flush
Teflon housing						
CA18FLF08NA	Teflon housing	NPN - NO/NC	10-40 VDC	Cable		3-8mm Flush
CA18FLF08PA	Teflon housing	PNP - NO/NC	10-40 VDC	Cable		
PVC housing						
CA18GLF08NA	PVC housing	NPN - NO/NC	10-40 VDC	Cable		3-8mm Flush
CA18GLF08PA	PVC housing	PNP - NO/NC	10-40 VDC	Cable		
Polypropylene housing						
CA18HLF08NA	Polypropylene housing	NPN - NO/NC	10-40 VDC	Cable		3-8mm Flush
CA18HLF08PA	Polypropylene housing	PNP - NO/NC	10-40 VDC	Cable		
CA18HLN12NA	Polypropylene housing	NPN - NO/NC	10-40 VDC	Cable		3-12mm Non-flush
CA18HLN12PA	Polypropylene housing	PNP - NO/NC	10-40 VDC	Cable		