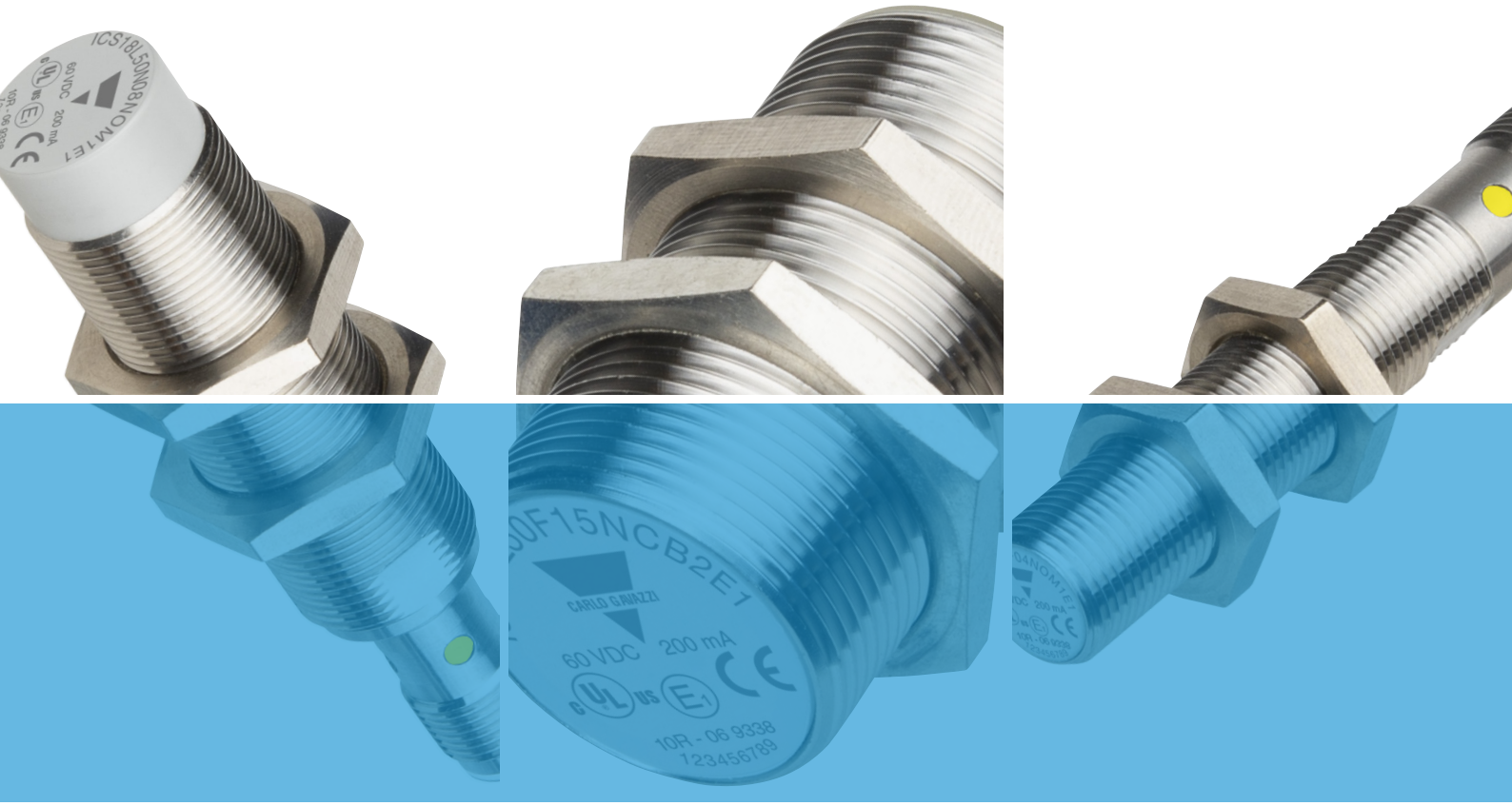
CARLO GAVAZZI
Automation Components

CARLO GAVAZZI

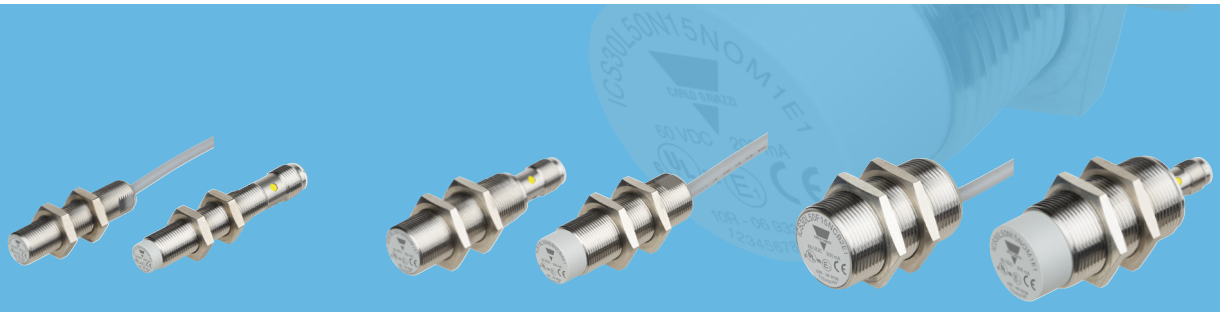


ICS E1 - Inductive sensors for mobile equipment

Sensors

ICS E1 series
Inductive sensors for mobile equipment

Mobile equipments is one of the most challenging applications ever for a sensor. Any device installed on a machinery being it a garbage truck, mobile crane, concrete mixer, tractor or fire truck, is subject to extreme operating conditions: from continuos exposure to high level of shocks and vibrations, wide temperature variations and voltage fluctuations, with voltage sags and peaks of up to 200 V, frequent high pressure and high temperature wash-down cycles and high electromagnetic interference.
ICS E1 inductive sensors have been developed, to survive these harsh environmental conditions and make you forget about them when installed on the vehicle, granting the highest uptime level of the machinery.



Reliable detection in mobile equipment

ICS E1 sensors is a robust solution for daily outdoor operations and assures accurate and reliable detection of actuating parts such as hydraulic pistons, gears speed and position, cranes position and movement, on mobile work machines.

Main features

- M12, M18 and M30 rugged stainless-steel housings available with 2m high-grade PUR cable or M12-plug
- Maximum electrical and mechanical flexibility with flush or non-flush versions and all output configurations: PNP, NPN, NO, NC
- High switching distances from 4 to 22 mm to allow a safe installation on the machine

Extreme performance

- E1 type approval with an immunity to radiated interference of up to 200 V/m
- Integrated load dump protection to prevent voltage peaks on the on-board power supply
- Wide voltage supply range, from 8 to 60 VDC, to grant proper operation with any vehicle's battery condition
- 20 g vibration resistance, 100 g shock resistance and 40 g continuous shock resistance
- Extended operating temperature range from -40 to +85°C
- IP68 and IP69K protection degree to avoid any water and moisture penetration during high pressure and high temperature washing cycles

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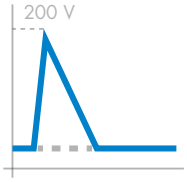
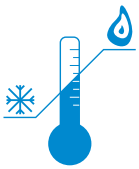
Main benefits

E1-type approval
A rigorous certification for mobile equipment and automotive industries to allow operation on public roads. ICS E1 sensors, with an outsyanding immunity to radiated interference of up to 200 V/m, set a new standard in the market for safe operation with presence of severe radiated interference typical of vehicle applications.

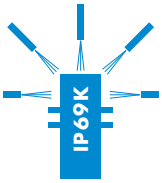


Load dump protection
The onboard power supply of the sensor is fully protected against the damaging voltage surges that generally occur in case of a sudden battery disconnection, for a loose connection or corrosion, while the vehicle alternator is supplying charging current. Sensors have been tested according to DIN ISO 7637-2/SAE J1113-11 Pulse 1, 2a, 2b, 3a, 3b, 4, 5a.

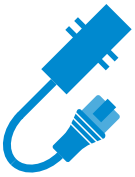
8 to 60 VDC
The wide voltage supply range grants a reliable operation of the sensor in any vehicle's battery conditions, compensating the typical high fluctuations such as voltage sags with discharging batteries, increased voltage during charging or voltage peaks when switching higher electrical loads such as hydraulic pumps.



-40 to +85°C
ICS E1 sensors have been designed with over specified components to operate reliably even with extreme outdoor conditions or when installed next to hot engines or exhaust systems.



Extreme mechanical durability
Robust stainless steel housings with excellent resistance to corrosive road salt chemicals, increased shock and vibrations resistance, and IP69K design to avoid any water and moisture penetration during periodic high temperature and high pressure cleaning cycles to remove oil, dust, grease and soils accumulated during daily operation.



Plug & play solutions
On request, also pigtail solutions with preassembled cables and rugged connectors typical of mobile equipment, such as Deutsch, Packard and Molex, are available for increased flexibility in the installation and plug & play reliable operation.

ICS E1 series
Inductive sensors for mobile equipment

Applications

Garbage trucks

Mobile cranes

Fire trucks

Earth-moving equipment

Buses

Agriculture machines

Concrete mixers

Forklifts

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E1
type approval

200 V/m
high immunity
ISO 11452-2

100 g shock
40 g continuous
shock resistance

Installation flexibility
PUR cable or M12 plug

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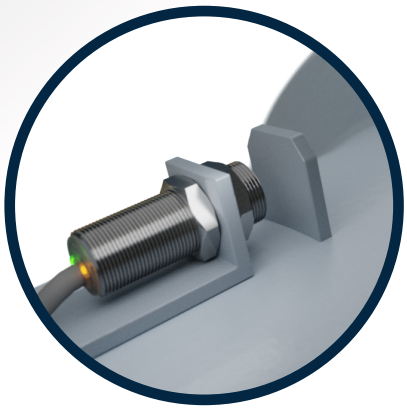
Load dump
protection

8 - 60 VDC
wide supply voltage

IP68, IP69K
protection degree



-40 to +85°C
extended temperature range

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ICS12 E1 series (3-wire DC)

Housing dimension			M12	
Material			Stainless steel AISI 304 housing	
Rated operational voltage			8 to 60 VDC	
Switching frequency			≤ 1300 Hz	≤ 1000 Hz
Rated operating distance, Sn			4 mm	8 mm
Installation type			Flush	Non-flush
2m PUR cable	NPN	NO	**ICS12L50F04NOB2E1**	**ICS12L50N08NOB2E1**
		NC	**ICS12L50F04NCB2E1**	**ICS12L50N08NCB2E1**
	PNP	NO	**ICS12L50F04POB2E1**	**ICS12L50N08POB2E1**
		NC	**ICS12L50F04PCB2E1**	**ICS12L50N08PCB2E1**
M12 - Plug	NPN	NO	**ICS12L50F04NOM1E1**	**ICS12L50N08NOM1E1**
		NC	**ICS12L50F04NCM1E1**	**ICS12L50N08NCM1E1**
	PNP	NO	**ICS12L50F04POM1E1**	**ICS12L50N08POM1E1**
		NC	**ICS12L50F04PCM1E1**	**ICS12L50N08PCM1E1**

ICS18 E1 series (3-wire DC)

Housing dimension			M18	
Material			Stainless steel AISI 304 housing	
Rated operational voltage			8 to 60 VDC	
Switching frequency			≤ 900 Hz	
Rated operating distance, Sn			8 mm	14 mm
Installation type			Flush	Non-flush
2m PUR cable	NPN	NO	**ICS18L50F08NOB2E1**	**ICS18L50N14NOB2E1**
		NC	**ICS18L50F08NCB2E1**	**ICS18L50N14NCB2E1**
	PNP	NO	**ICS18L50F08POB2E1**	**ICS18L50N14POB2E1**
		NC	**ICS18L50F08PCB2E1**	**ICS18L50N14PCB2E1**
M12 - Plug	NPN	NO	**ICS18L50F08NOM1E1**	**ICS18L50N14NOM1E1**
		NC	**ICS18L50F08NCM1E1**	**ICS18L50N14NCM1E1**
	PNP	NO	**ICS18L50F08POM1E1**	**ICS18L50N14POM1E1**
		NC	**ICS18L50F08PCM1E1**	**ICS18L50N14PCM1E1**

ICS30 E1 series (3-wire DC)

Housing dimension			M30	
Material			Stainless steel AISI 304 housing	
Rated operational voltage			8 to 60 VDC	
Switching frequency			≤ 300 Hz	
Rated operating distance, Sn			15 mm	22 mm
Installation type			Flush	Non-flush
2m PUR cable	NPN	NO	**ICS30L50F15NOB2E1**	**ICS30L50N22NOB2E1**
		NC	**ICS30L50F15NCB2E1**	**ICS30L50N22NCB2E1**
	PNP	NO	**ICS30L50F15POB2E1**	**ICS30L50N22POB2E1**
		NC	**ICS30L50F15PCB2E1**	**ICS30L50N22PCB2E1**
M12 - Plug	NPN	NO	**ICS30L50F15NOM1E1**	**ICS30L50N22NOM1E1**
		NC	**ICS30L50F15NCM1E1**	**ICS30L50N22NCM1E1**
	PNP	NO	**ICS30L50F15POM1E1**	**ICS30L50N22POM1E1**
		NC	**ICS30L50F15PCM1E1**	**ICS30L50N22PCM1E1**

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