

AVVERTENZE IMPORTANTI DA LEGGERE PRIMA DELL'INSTALLAZIONE



QUESTI SENSORI NON SONO DISPOSITIVI DI SICUREZZA, PERCIÒ NON POSSONO ESSERE USATI PER PREVENIRE DANNI ALLE PERSONE, DANNI ALLE COSE, DANNI INDUSTRIALI E PREVENIRE INCIDENTI.

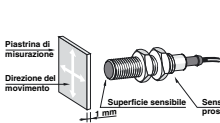
COLLEGAMENTI

- Non superare i limiti di tensione indicati sull'etichetta del prodotto. Per i sensori in DC (Corrente Continua) usare un'alimentazione stabile.
- Non collegare i cavi di alimentazione dei sensori a valle di altri dispositivi ed accertarsi che siano connessi direttamente alla rete.
- Se l'alimentatore è un regolatore di tipo "switching", collegare a terra il terminale di terra dell'alimentatore.
- Collegare a terra il terminale di terra e tutte le parti metalliche di ogni mac-china industriale e non se il sensore è utilizzato in essa.
- Non usare i sensori in vicinanza di campi elettromagnetici od ad alta frequenza.
- I cavi dei sensori devono essere separati dai cavi di potenza, dai cavi di alimentazione dei motori, dai cavi degli "inverter" o da qualsiasi altro dispositivo elettromagnetico, perché i disturbi indotti potrebbero causare un cattivo funzionamento o danni ai sensori. Separare i fili dei sensori dai cavi sopra citati e quindi inserire i cavi in una canalina metallica connessa a terra.
- Dopo aver eseguito le operazioni citate al punto 6, se esistono disturbi indotti, deve essere utilizzato un adeguato filtro soppressore di disturbi sul cavo di alimentazione in prossimità dei sensori.
- Quando deve essere coperta una lunga distanza tra i fili di collegamento ed il sensore, utilizzare conduttori con sezione di almeno 0,50 mm² e non superare la distanza massima di 100 m.

9) Il segnale di uscita di un sensore non può essere usato durante la fase di RITARDO ALLA DISPONIBILITÀ (non più di 300 ms): vedere descrizione dettagliata nel CATALOGO GENERALE).

10) L'utilizzo di più sensori in serie o in parallelo è sconsigliato.

DISTANZA DI INTERVENTO (Sn)



È quella distanza per cui il sensore di prossimità commuta all'approssimarsi, in movimento assiale, della piastrina di misura. Tale piastrina (secondo le norme EN 500 10) deve essere in acciaio Fe37, avere una forma quadrata ed uno spessore di 1 mm. Il lato della piastrina deve essere uguale al diametro del sensore.

FATTORI DI RIDUZIONE

Nel caso in cui l'elemento da rilevare sia diverso del Fe37, si devono considerare con attenzione i seguenti fattori orientativi di riduzione, che possono variare - in positivo o in negativo - in funzione del tipo di sensore utilizzato (tipo schermato o non schermato, con contenitore in ottone o in acciaio inox) e delle caratteristiche fisico-chimiche (dimensioni, spessore e composizione) dell'elemento da rilevare. Perciò il produttore raccomanda di testare il sensore scelto con l'elemento da rilevare prima di dimensionare l'applicazione.

SENSORI INDUTTIVI		SENSORI CAPACITIVI	
Fe37	1 x Sn*	Metallo	1 x Sn*
Acciaio inox	0,9 x Sn	Acqua	1 x Sn
Ottone Bronzo	0,5 x Sn	P.V.C.	0,5 x Sn
Alluminio	0,4 x Sn	Vetro	0,5 x Sn
Rame	0,4 x Sn	Legno	0,4 x Sn

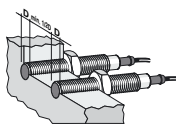
*Sn = distanza di intervento nominale

MONTAGGIO

- Per un corretto montaggio ed allineamento devono essere utilizzati tutti gli accessori forniti in dotazione con il sensore.
- Per regolare il trimmer di sensibilità usare un cacciavite adeguato senza forzare.
- Non fissare in modo eccessivo viti o dadi per evitare danni elettrici e meccanici al sensore.
- Nell'installazione affiancata di più sensori, lasciare uno spazio adeguato tra i vari sensori per evitare interferenze reciproche.
- Non tirare il cavo di collegamento del sensore. Quando le condizioni di impiego risultano gravose (zone non protette da eventuali urti, movimentazioni) utilizzare una guaina di protezione.
- Evitare continui movimenti tra cavo e sensore ed attenersi a quanto indicato nel disegno.
- Proteggere la superficie sensibile del sensore da urti o pressioni meccaniche per evitare il verificarsi di danni irreparabili.
- Installare il sensore in modo che frucioli metallici o qualsiasi altro materiale non si depositino sulla parte sensibile.
- Non utilizzare i sensori in presenza di solventi organici, liquidi o acidi di qualsiasi tipo.
- Non usare i sensori all'aperto senza adeguata protezione.
- Non superare i limiti di temperatura indicati.

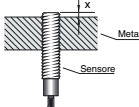
- Non sottoporre il dispositivo a forti vibrazioni o a colpi che possono danneggiare il sensore o pregiudicare l'impermeabilità.
- Nonostante alcuni tipi di sensori siano protetti IP-67, questo non significa che essi possono essere usati in presenza di getti d'acqua o per individuare oggetti in acqua.
- Non utilizzare i sensori a pressione superiore a 1,5 Bar.

MODELLI SCHERMATI



Questi sensori non risentono dell'influenza del metallo circostante e quindi possono essere immersi in esso. Nel montaggio di più sensori affiancati, per evitare interferenze reciproche, la distanza minima tra uno e l'altro deve essere D/2 (D = diametro sensore).

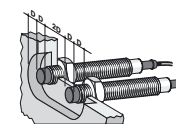
MODELLI SCHERMATI CON PORTATA MAGGIORATA



Nel montaggio a filo metallo rispettare i seguenti valori:

Ø (mm)	6,5	8	12	18	30
X	≥ 1	≥ 1	≥ 2	≥ 3,5	≥ 5

MODELLI NON SCHERMATI



Questi sensori risentono dell'influenza del metallo e quindi la zona prossima alla superficie attiva ne deve essere libera. Tale zona può essere costituita da aria, materiale non magnetico e non conduttore. Nel montaggio affiancato la distanza tra due sensori deve essere 2D (D = diametro sensore).

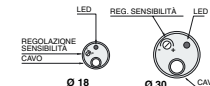
COPPIE DI SERRAGGIO DEI DADI DI FISSAGGIO

Evitare di serrare i dadi di fissaggio eccessivamente per non danneggiare l'involucro e causare la conseguente rottura del circuito interno. Porre particolare attenzione nei modelli con diametro inferiore a 12 mm.

REGOLAZIONE DELLA SENSIBILITÀ PER SENSORI CAPACITIVI

La regolazione della sensibilità deve essere effettuata quando il sensore è installato in posizione definitiva e stabile. La regolazione deve essere effettuata in posizione intermedia tra il minimo ed il massimo perché, emittendo l'aria un dielettrico, si deve considerare che una forte variazione di umidità potrebbe portare, se la regolazione è molto fine, ad eccitazioni non volute. La distanza di intervento del sensore è in funzione del tipo di materiale da rilevare e delle sue dimensioni (si veda la tabella fattori di riduzione). La distanza può variare in funzione della variazione di temperatura di circa 10% in un campo da -20 a +70°C. Per aumentare la sensibilità ruotare il trimmer in senso orario, per diminuirlo ruotare in senso antiorario. Per accedere al trimmer, togliere la vite plastica di protezione posta sul retro del sensore.

SENSORI CAPACITIVI

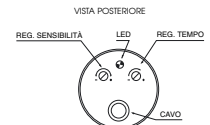


SENSORE CAPACITIVO TEMPORIZZATO

Per effettuare la regolazione della sensibilità in questi modelli, azzerare prima il trimmer di temporizzazione.

La gamma di temporizzazione disponibile è:

1 SEC. 5 MIN.



Il produttore non è responsabile per l'uso improprio del prodotto. Qualsiasi uso e/o applicazione non previsti dal presente foglio di istruzioni devono essere preventivamente e direttamente autorizzati dal produttore stesso.



I prodotti che riportano questo marchio sono conformi alle direttive 89/336/CEE (relativa alla compatibilità elettromagnetica) e 73/23/CEE (relativa al materiale elettrico destinato ad essere usato entro taluni termini di tensione).

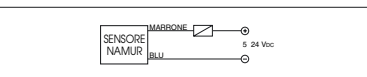
I prodotti che riportano questo marchio sono conformi alla direttiva 94/9/CE ("ATEX") del 24/03/1994, senza, grado di protezione di gruppo, categoria, zona, grado di protezione e classe di temperatura riportate sul prodotto stesso.

Per tutti i prodotti che riportano questo marchio sono autorizzati dal produttore stesso.

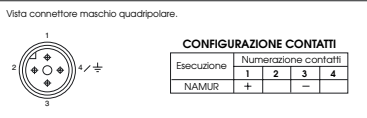
Per l'aggiornamento delle specifiche consultare il nostro sito: www.infrainternational.com

SCHEMI DI COLLEGAMENTO

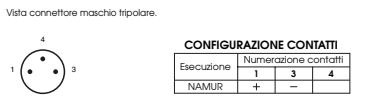
SENSORI INDUTTIVI A NORME NAMUR



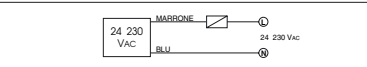
CON CONNETTORE M 12 (K)



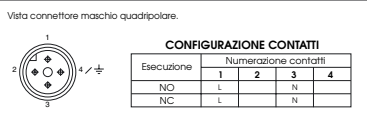
CON CONNETTORE M 8 (K1)



SENSORI INDUTTIVI AMPLIFICATI 24 230 VAC 2 FILI USCITA NO O NC

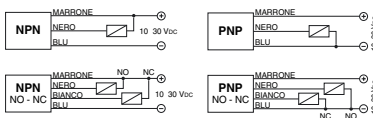


CON CONNETTORE M 12 (K)

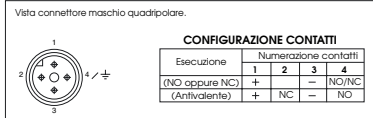


SENSORI INDUTTIVI E CAPACITIVI AMPLIFICATI 1030 Vdc 3-4 FILI USCITA NPN O PNP

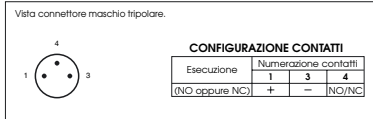
CONFIGURAZIONI D'USCITA



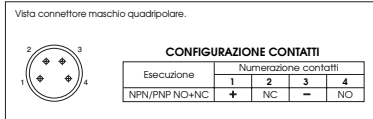
CON CONNETTORE M 12 (K)



CON CONNETTORE M 8 (K1)



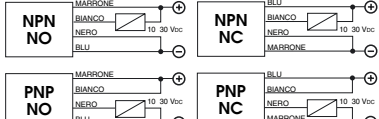
CON CONNETTORE M 8 (K2) (CAPACITIVI)



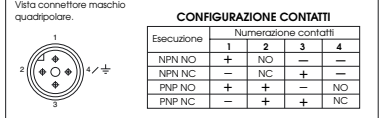
SENSORI AMPLIFICATI 10-30 Vdc 4 FILI USCITA PROGRAMMABILE

Grazie allo stadio di uscita disaccoppiato dal resto del circuito, i sensori in questa esecuzione permettono dei notevoli vantaggi, quali la possibilità di realizzare le quattro configurazioni di uscita (NPN-NO, NPN-NC, PNP-NO, PNP-NC) sullo stesso modello.

CONFIGURAZIONI D'USCITA



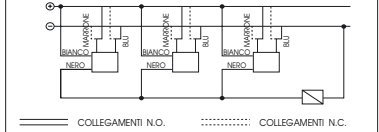
CON CONNETTORE M 12 (K)



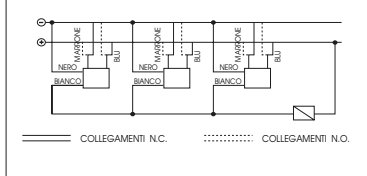
COLLEGAMENTO IN PARALLELO (OR)

I sensori connessi in questo modo, se eccitati, possono abilitare indipendentemente l'uscita comune. A causa del bassissimo valore della corrente di fuga non esistono pratiche limitazioni numeriche al collegamento di più sensori in parallelo purché la corrente minima di eccitazione del carico sia dell'ordine dei mA.

CONFIGURAZIONI PNP



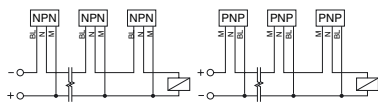
CONFIGURAZIONI NPN



COLLEGAMENTI IN SERIE PARALLELO PER SENSORI NPN O PNP

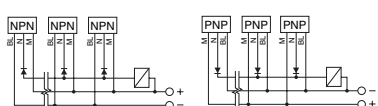
Nel realizzare questo tipo di collegamento considerare quanto segue:

- la caduta di tensione (C.D.T.) di ogni sensore (<1,8 V);
- la corrente di carico massima dei sensori utilizzati in relazione all'autoconsumo di ogni singolo sensore (< 10 mA) ed al carico finale.

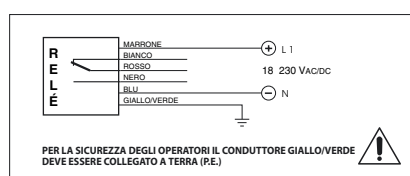


COLLEGAMENTO IN PARALLELO (OR)

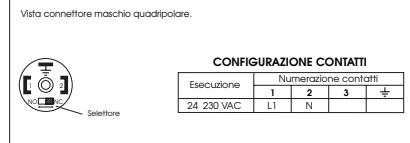
Volendo omettere i diodi indicati negli schemi, utilizzare sensori con stadio finale del tipo a collettore aperto.



SENSORI CAPACITIVI AMPLIFICATI 18 230 VAC-DC 5 FILI - USCITA RELÉ



MODELLI CON USCITA A CONNETTORE (CAPACITIVI)



COLLEGAMENTI IN SERIE E PARALLELO PER I SENSORI IN AC

Tali collegamenti sono sconsigliabili perché possono generare un funzionamento anomalo dei sensori stessi.

AVVERTENZA PER ALIMENTAZIONE A 24 VAC

Nei sensori con alimentazione a 24 VAC tenere conto della caduta di tensione (<6 V) presente ai capi del sensore e della caduta eventuale sui cavi di collegamento tra il sensore ed il carico. Per ottenere una tensione adeguata sul carico si consiglia di aumentare la tensione di alimentazione almeno di 6V.

AVVERTENZA: Le apparecchiature INFRA sono garantite per un periodo di 24 mesi. In questo periodo saranno riparate o sostituite tutte quelle apparecchiature danneggiate per uso inadeguato, saranno addebitate al Committente le spese inerenti la prestazione effettuata. Il resto delle riparazioni non sono imputabili. La riparazione delle presenti istruzioni, in tutto o in parte, è vietata. La società INFRA si riserva il diritto di apportare alle proprie apparecchiature le modifiche necessarie, senza preavviso, in qualsiasi momento.

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IMPORTANT WARNINGS TO READ BEFORE SETTING



THESE SENSORS ARE NOT SAFETY DEVICES, THEREFORE THEY CANNOT BE USED TO PREVENT INJURES TO PERSONS, DAMAGES, INDUSTRIAL DAMAGES, ACCIDENTS.

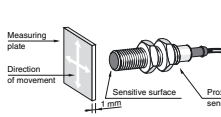
CONNECTIONS

- Do not exceed the voltage limits printed on the product label. For DC sensors, use stable tension.
- Do not connect the sensors power supply cables down-stream from other devices and make sure they are directly connected to the mains.
- If the power supply source is a switching voltage regulator, connect the FG (Frame Ground) terminal to the ground.
- Connect to ground the FG (Frame Ground) terminal and all other metallic parts of every industrial machine or not if a sensor is used in it.
- Do not use the sensors near electromagnetic or high frequency fields.
- The sensor cables must be separate from the power supply cables, from the engine cables, from the inverter cables, or from any other electro-magnetic device because induction noise could cause malfunction or damage to the inductive sensor. Separate the wires of the sensor from the above indicated lines and then insert the wires into an earthed metal conduit.
- After making all operations mentioned in the above point 6., if inductive interference exists, an adequate transient suppression filter must be used on the power supply line in proximity to the sensor.
- When a large distance has to be covered by the connection wires to the sensor, use conductors with a cross-section of at least 0,50 mm² and do not exceed the maximum distance of 100 m.
- The output signal of a sensor cannot be used during the START UP DELAY (not more than 300 mS, see detailed description on GENERAL CATALOG).

- The use of sensors connected in series or in parallel is not recommended.



SWITCHING DISTANCE (Sn)



The distance at which the diffuse sensor switches when approaching standard targets with axial movement. Such target (conform to the EN 500 10 regulation) should be of steel Fe37, square and 1mm thick. Targets should be the same as the sensor diameter.

REDUCING FACTORS

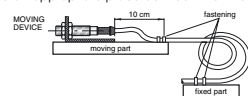
When the element to be detected is different from Fe37, pay attention to the following indicative reduction factors that can change decrease or increase in connection with the sensor model you shall install (shielded or not shielded type, with brass housing or stainless steel housing) and with the physical and chemical features (size, thickness and composition) of the element to be detected.

INDUCTIVE SENSORS		CAPACITIVE SENSORS	
Fe37	1 x Sn*	Metal	1 x Sn*
Stainless-steel	0,9 x Sn	Water	1 x Sn
Brass-bronze	0,5 x Sn	P.V.C.	0,5 x Sn
Aluminium	0,4 x Sn	Glass	0,5 x Sn
Copper	0,4 x Sn	Wood	0,4 x Sn

*Sn = Nominal switching distance

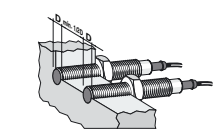
ASSEMBLY

- For correct assembly and alignment, all the accessories supplied with the sensor must be used.
- To regulate the sensitivity adjustment trimmer use a suitable screw-driver without exerting excessive force.
- Do not turn too much fixing screws or nuts to avoid electrical or mechanical damages.
- Mounting sensors side by side, leave an appropriate place between them to avoid mutual interference.
- Do not pull the connection cable of the sensor. When the conditions of use result to be too hard (in places not protected from shocks or subjected to movements) use a protective sheath.
- Avoid continuous movements between the sensor and its cable and follow the instructions given in the drawing.
- Protect the sensitive surface of the sensor from shocks, mechanical pressures to avoid irreparable damages.
- Install the sensor being careful that metallic (or of any other material) shavings shall not settle on the sensitive part of the sensor.
- Do not use the sensors in presence of organic or liquid solvents or of any kind of acid.
- Do not use the sensors outdoors without an adequate protection.
- Do not exceed the indicated temperature limits.
- Do not subject the appliance to strong vibrations or to shocks which can damage the sensor or can harm its impermeability.



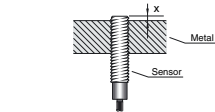
- Although some range of sensors are protected IP-67, this does not mean that these devices can be used in presence of water jets or to detect objects in water.
- Do not use the sensors at pressure superior to 1,5 Bar.

SHIELDED TYPES



These sensors are not effected by the surrounding metal and therefore the unit can be embedded in it. In order to avoid reciprocal interference when more sensors are installed side by side, the minimum distance between two sensors must be D/2 (D = sensor diameter).

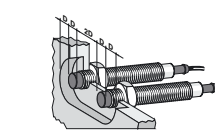
SHIELDED TYPES INCREASED RANGE



For assembly in contact with the metal surface, observe the following values:

Ø	6,5	8	12	18	30
(mm) X	≥ 1	≥ 1	≥ 2	≥ 3,5	≥ 5

NOT SHIELDED TYPES



As these sensors are effected by metal, the area close to the active surface should be free. This area can be of air, non-magnetic or non-conductive material. When sensors are installed side by side, the distance between two sensors should be 2D (D = sensor diameter).

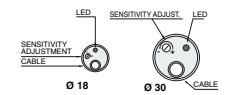
TORQUE SETTING FOR FASTENING NUTS

Avoid over-tightening the fastening nuts in order not to damage the container and to avoid breaking the internal circuit as a result. Take particular care with the models which have a diameter less than 12 mm.

SENSITIVITY ADJUSTMENT FOR CAPACITIVE SENSORS

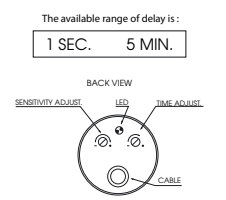
Sensitivity adjustment should be carried out when the sensor is installed in a definitive and stable position. Adjustment should be carried out in an intermediate position between minimum and maximum because, since air is a dielectric, a strong variation in humidity could cause inappropriate energising of the sensor (if adjustment is very fine). The intervention range of the sensor depends on the type of material to be detected and its dimensions (see reduction factor table). The distance can vary depending on the temperature variation by about 10% in a range of -20 to +70C. To increase sensitivity, turn the trimmer clockwise, to decrease sensitivity, turn it anti-clockwise. To gain access to the trimmer, remove the plastic protection screw located at the back of the sensor.

CAPACITIVE SENSORS



CAPACITIVE SENSORS WITH ON/OFF TIME DELAY

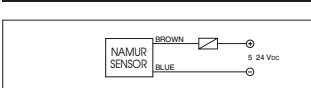
To regulate the sensitivity of these models, reset the time delay trimmer before.



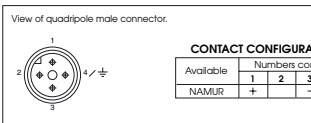
The manufacturer is not liable for the improper use of the product. Any use and/or application which are not provided for by this instructions sheet must be previously and directly authorized by the same manufacturer. For the latest updated specifications see our web-site: www.infrainternational.com

WIRING DIAGRAMS

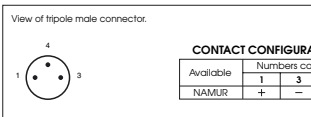
INDUCTIVE SENSORS CONFORMING TO NAMUR



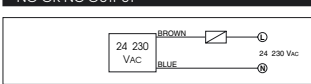
WITH CONNECTOR M 12 (K)



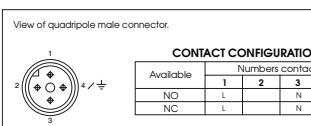
WITH CONNECTOR M 8 (K1)



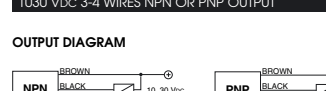
AMPLIFIED INDUCT. SENSORS 24 230 VAC 2 WIRES NO OR NC OUTPUT



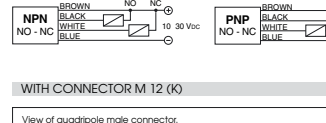
WITH CONNECTOR M 12 (K)



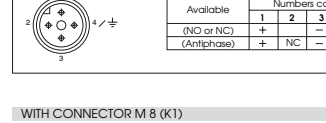
AMPLIFIED INDUCTIVE AND CAPACITIVE SENSORS 1030 Vdc 3-4 WIRES NPN OR PNP OUTPUT



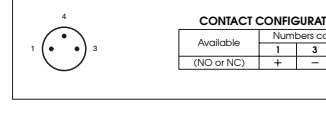
WITH CONNECTOR M 12 (K)



WITH CONNECTOR M 8 (K1)



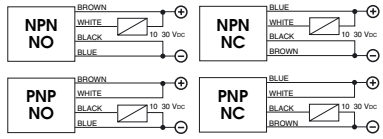
WITH CONNECTOR M 8 (K2) (CAPACITIVE)



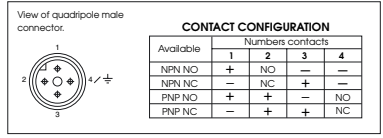
AMPLIFIED SENSORS 10-30 Vdc 4 WIRES PROGRAMMABLE OUTPUT

Thank to the output separated from the rest of circuit, sensors so connected provide important advantages, such as the possibility of 4 output configurations (NPN-NO, NPN-NC, PNP-NO, PNP-NC) on the same model.

OUTPUT DIAGRAM



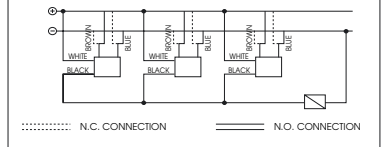
WITH CONNECTOR M 12 (K)



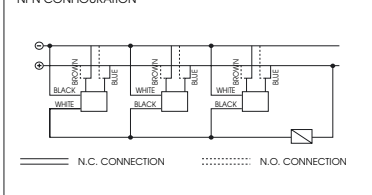
CONNECTION IN PARALLEL (OR)

When connected in this way sensors can activate the common output independently, when activated. Thank to the real low leaking current, there is no actual limitation in the number of sensor that can be connected in parallel, providing that the min. current of load activation is mA.

PNP CONFIGURATION

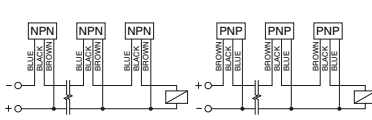


NPN CONFIGURATION



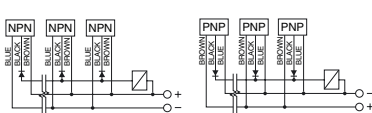
SERIES AND PARALLEL CONNECTIONS FOR NPN OR PNP SENSORS

With this kind of connection take into account as follow:
1) voltage drop (C.D.T) for each sensor (<1,8 V);
2) maximum load current of sensors referring to self consumption of each sensor (< 10 mA) at output load.

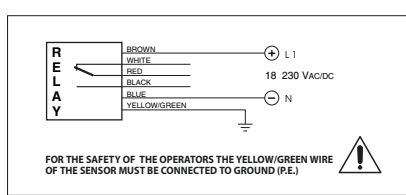


CONNECTION IN PARALLEL (OR)

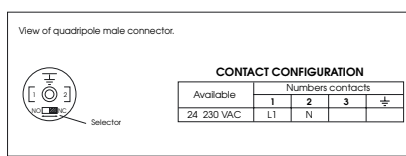
When omitting the diodes shown in the chart, use sensors with output stage, open collector type.



AMPLIFIED CAPAC. SENSORS 18230 VAC-DC 5 WIRES - RELAY OUTPUT



MODELS FOR CONNECTOR OUTPUT (CAPACITIVE)



SERIES AND PARALLEL CONNECTIONS FOR AC SENSORS

These connections are not advisable as they may cause anomalies.

NOTICE FOR 24 VAC SUPPLY

In sensor with 24VAC supply it is important to pay attention to the voltage drop (<6 V) at the ends of the sensor and a possible drop in the connection cables between sensor and load. In order to have a proper voltage on the load, it is advisable to increase supply voltage by at least 6V.

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