

# PROXIMITY SENSOR TERMINOLOGY

## Installation notes, (cont.)

Check that the number of operations does not exceed the maximum switching frequency. If the phase of the output signal is important, check the turn on and turn off time.

Metallic chips or dust must not accumulate on the sensing face. The distance between the sensor and the object to detect must not exceed the assured operating distance  $S_a$ ; the best operating distance is  $S_n/2$ .

Check the effect of vibrations.

Install the sensor using the installation accessories and do not exceed the maximum tightening torque.

## Leakage current

The leakage current is the current which passes through the output transistor when it is blocked (this must be taken into account, especially in the case of parallel connection of several switches).

## LED status indicators

Proximity switches may incorporate one or more color indicators. The meaning of the colors are:

- CONTINUOUS GREEN: Power ON
- CONTINUOUS YELLOW: Output ON
- CONTINUOUS RED: Fault
- (on AC models, RED = output ON)

## Make function (N.O., normally open)

A make function causes load current to flow only when a target is detected.

## Material influence

The nominal sensing distance  $S(n)$  is defined using precisely defined measuring conditions (See **Operating Distance**.) Other conditions may result in a reduction of the operating distance. The tables in the next column show the influence different target materials have on the operating distances of the sensors.

Material Influence: Table 1	
Target Material	Operating Distance
Steel Type FE 360	$S(n) \times 1.00$
Brass	$S(n) \times 0.64$
Aluminum	$S(n) \times 0.55$
Copper	$S(n) \times 0.51$
Stainless Steel (V2A)	$S(n) \times 0.85$

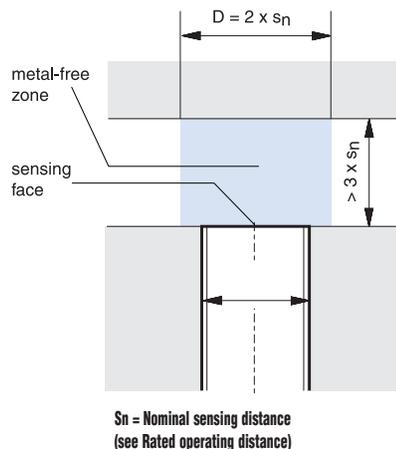
Material Influence: Table 2	
Target Material	Operating Distance
Steel Type FE 360	$S(n) \times 1.00$
Brass	$S(n) \times 0.44$
Aluminum	$S(n) \times 0.36$
Copper	$S(n) \times 0.32$
Stainless Steel (V2A)	$S(n) \times 0.69$

Material Influence: Table 3	
Target Material	Operating Distance
Steel Type FE 360	$S(n) \times 1.00$
Brass	$S(n) \times 1.00$
Aluminum	$S(n) \times 1.30$
Copper	$S(n) \times 0.89$
SS (1mm thick)	$S(n) \times 0.57$
SS (2mm thick)	$S(n) \times 0.90$

## Mounting

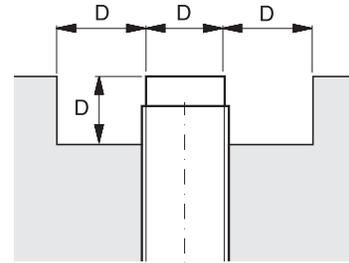
Shielded (embeddable) proximity switches

These proximity switches may be flush mounted regardless of the metal being used. For reliable operation, it is necessary to observe the minimum distances from adjacent metal targets.



Unshielded (non-embeddable) proximity switches

When mounting non-embeddable mounting proximity switches in conducting materials (metals), it is necessary to observe the minimum distances from adjacent metal targets. Flush mounting in non-conducting materials is permitted.



## Off-state (leakage) current (Ir)

This is the current that flows through the load circuit of the proximity switch in the OFF state at the maximum supply voltage.

## Open collector

The output transistor is not internally connected to a pull-up or pull-down load. It is therefore possible to connect an external load supplied by an external voltage.

## Operating distance (sensing range) (S)

The operating distance is the distance at which a standard target approaching the active face of the sensor causes a sensor output state change.

## Output type and load connections – 3-wire NPN

There are two power wires and one output wire. The switching element is connected between the output wire and the negative terminal, and the load is connected between the output wire and the positive terminal. In the ON state, the current sinks from the load into the switching element.

