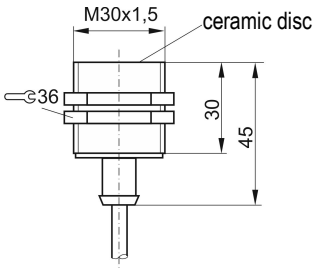
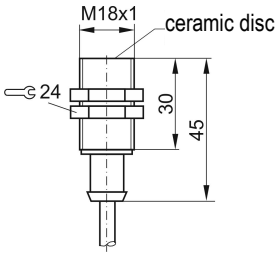
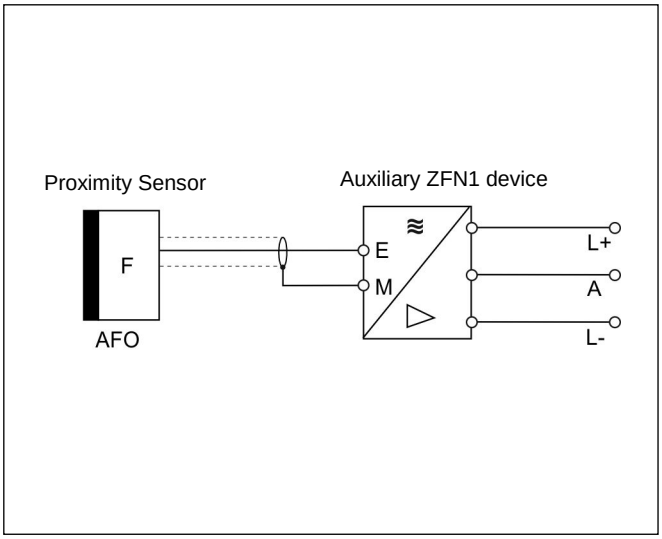
## AFO Proximity Sensors (0 … +200 °C)

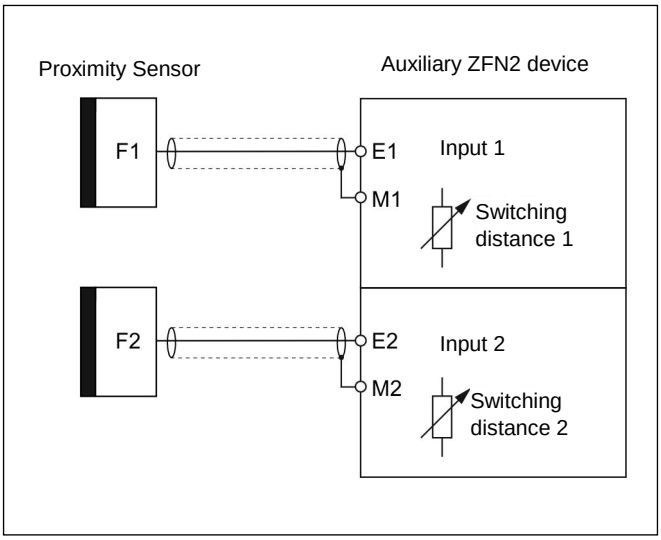
The small-sized, light-weight Inductive AFO Proximity Sensors are tough, insensitive to high accelarations and resistant to temperatures of up to +200 °C. These features are required when used for applications in harsh environments. These non-contact proximity sensors function like proximity switches, but allow the setting of the switching distance when connected to an evaluation device. Next to ferrous materials, AFO Proximity Sensors detect also a lot of other metals.

Proximity Sensors are resistant to oil and water and are working non-reactive however small the parts to be detected are. They can be mounted flush in metals, and short response times guarantee that they are working reliably however fast the movements are.

| | **AFO-63** | **AFO-77** |
|---|---|---|
| | **Ref. no. 12.04-85** | **Ref. no. 12.04-99** |
| |  |  |
| Design; length | M30 x 1,5; 30 mm | M18 x 1; 30 mm |
| Material of the sensing face | ceramic | ceramic |
| Material of the housing | steel | steel |
| Maximum switching distance | 8 mm | 4 mm |
| Mounting instructions | flush mounting | flush mounting |
| Operating alternating voltage | ≤ 10 V | ≤ 10 V |
| Operating frequency (at 23°C, together with evaluation devices ZFN1 and ZFN2) | 100 Hz | 300 Hz |
| Ambiant temperature range | 0 … +200 °C | 0 … +200 °C |
| Connection | via one-core, shielded Teflon lead | via one-core, shielded Teflon lead |
| Specific lead capacity | C ≤ 100 pF/m | C ≤ 100 pF/m |
| Maximum lead length Sensor evaluation device | ≤ 20 m | ≤ 20 m |
| Length of sensor lead | 1.2 m | 1.2 m |
| Protection rating | IP 65 | IP 65 |
| Weight | 120 g | 55 g |
| Output | Passive output for connecting an AFO Proximity Sensor to a ZFN1/a10ca-1.3 (Ref. no. 20.08-31) evaluation device or for connecting two AFO Proximity Sensors to a ZFN2/a10ca-1.3 (Ref. no. 20.09-23) | |

## Wiring




The indicated switching distance refers to iron. When using AFO Proximity Sensors for non-ferrous metals, a reduction factor has to be taken into account.

To set the indicated switching distance in the evaluation device with the potentiometer for switching distance setting, you have to put a piece of insulation paper (e.g. hard paper) as thick as the switching distance on the sensor and cover it with a metal lug. By turning the potentiometer the sensor will adopt the state "just damped".

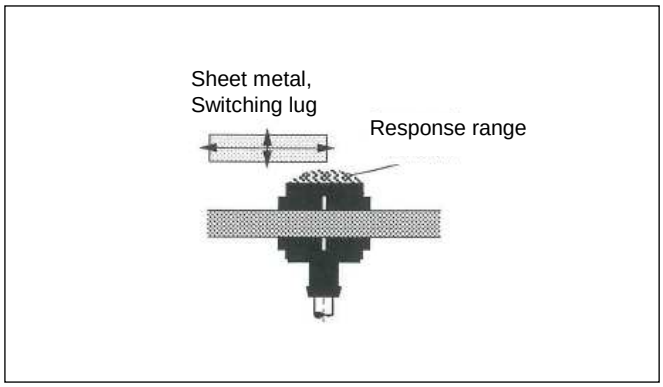
The indicated switching distance is to be considered as maximum value, and should not be exceeded.

For ensuring in the event of an error safe operation with regard to the output signal, the auxiliary ZFN is equipped with a broken-wire security.

The connecting lead between sensor and evaluation device should be shielded and of low-capacitance.

Proximity switches can be used for transmitting signals in counters, breakage control of rotating and fixed tooling and machinery elements as well as signal sensors when conditions are harsh or the climate is unfavorable.

## Example for installation




## Safety regulations:

The above-mentioned product is a component within the termes of the EU Directives. It is intended for mounting in a machine or system and cannot be operated independantly. As part of the electrical equipment of a machine or system, it must be included by the manufacturer of the machine or system in the process of conformity declaration. Commissioning and maintenance must be performed only by qualitfied specialists or instructed staff.

## Purpose

When used with an AFO Proximity Sensor, these ZFN devices are working like three-pole inductive proximity switches for DC for a temperature range of up to +200 °C.

## Application

As Proximity Switch when the sensor is used in cramped spaces or harsh environments. Since all our AFO versions can be connected, it is possible to choose for the particular application the suitable sensor.

## Function

The connected AFO forms the inductive part of the oscillator circuit located on the input side of the ZFN. The switching elements connected to the oscillator correspond to a standard AC 3-pole, the output of which is the make-contact (NO) when the sensor is damped. A potentiometer allows to set the switching distance which depends on the AFO being used

## Indicator

1 or 2 red LEDs: output active.

## Versions

There are two different versions: the ZFN1 housing consists of a single unit and the ZFN2 housing consists of two units. The L+ and L- connections of the double-unit version are galvanically connected with each other. This makes it very easy to connect the devices in series.

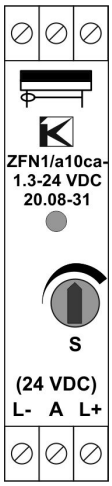
## Technical Data

| | |
|---|---|
| Input | for AFO Proximity Sensor |
| - Operating frequency | depends on AFO type |
| - Damping duration | depends on AFO type |
| Output | transistor, plus-switching |
| - Operating voltage | 10 … 30 VDC |
| - Load current | ≤ 400 mA, short circuit proof |
| - Current consumption without load | ≤ 30 mA |
| - Residual voltage | ≤ 2.5 VDC |
| Housing | |
| - Material | polyamide, green |
| - Mounting | snap-in |
| - Protection rating | IP 20 |
| - Clamps | screw connectors, max 2.5 $mm^2$ |
| Weight | |
| - Single-unit device | approx. 70 g |
| - Double-unit device | approx. 100 g |
| Ambient temperature range | 0 … +80 °C |

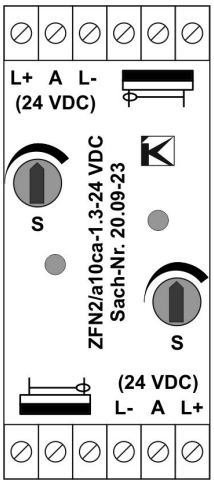
## Order Data

| | |
|---|---|
| ZFN1/a10ca-1.3-24 VDC | Ref. no. 20.08-31 |
| ZFN2/a10ca-1.3-24 VDC | Ref. no. 20.09-23 |

## Connection

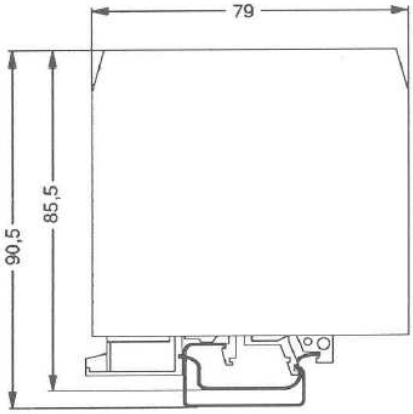


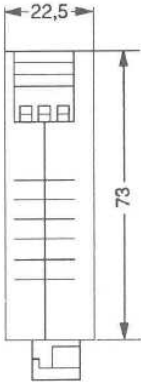

ZFN1: 1 Proximity Sensor



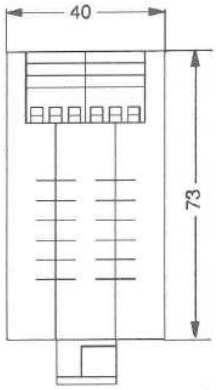

ZFN2: 2 Proximity Sensors

## Dimensions of the housing




Single-unit device




Double-unit device

We are certified according to DIN EN ISO 9001

Subject to technical changes!