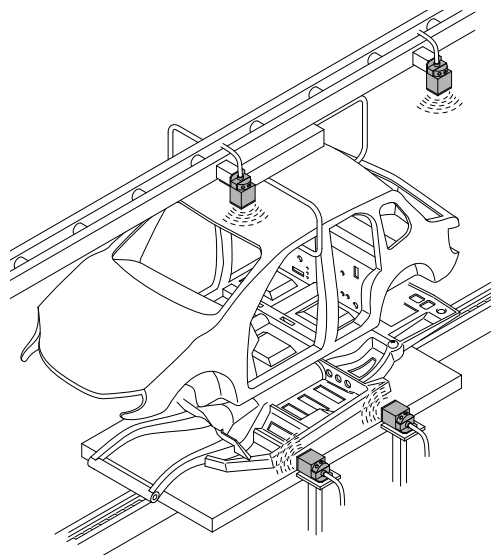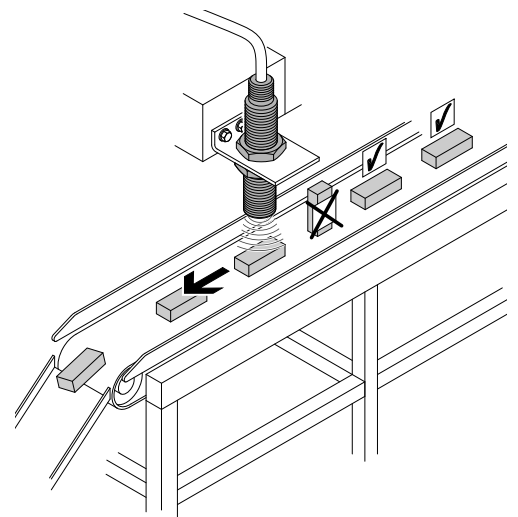# Inductive proximity switches and sensors

The SIE series sensors can detect all metals, with functions ranging from sensing to distance measurement of metallic objects.

Sensing over large distances: Inductive proximity sensor SIEF-Q40

Position detection with the analogue inductive sensor SIEA

Standardised:
Standard inductive proximity sensors SIE..
Standardised, low cost, reliable, simple – suitable for a wide range of applications.

• Diameter of 3 mm to M30
• With plug or cable
• Normally closed or normally open contact
• Flush or non-flush fitting
• High protection class: IP67

• D.C. voltage designs in 3-wire connection PNP and NPN
• LED for switching status display
• Standard-compliant external construction facilitates simple replacement of existing solutions

Made of polyamide:
Inductive proximity sensor SIEN/SIED...-PA
The ultimate low-cost solution for detecting metallic objects.

• Approved for the food and packaging industry, also used in the chemical industry
• Sturdy thanks to the high protection class IP65/IP67

• Standard sizes: M12, M18, M30
• Economical thanks to attractive price/performance ratio

250 % faster: Inductive proximity sensor SIEF Factor 1
The perfect combination of new features – the easiest and most reliable sensor ever.

- Factor 1, identical switching distances for a wide range of different metals
- Considerably greater switching distance compared to standard sensors

- 250 % faster than conventional proximity sensors
- Insensitive to external DC and AC magnetic fields

Square: Sensors SIES (special design)

Square designs in different sizes have been added to the cylindrical designs.

- Thanks to their design, these versions can be mounted directly and are thus extremely space-saving

With analogue output: Inductive sensor SIEA
Simple, economical and precise, ideal for measuring, monitoring and checking functions at 20 mm distance. These SIEA sensors are equipped with an analogue signal which is proportional to distance and offers a voltage and current output.

- Standard sizes: M8, M12, M18, M30

- High resolution and excellent repetition accuracy
- Large sensing range of up to 20 mm (M30)
- Virtually all sizes offer two standard analogue outputs of 4 … 20 mA and 0 … 10 V

With stainless steel housing: Inductive sensor SIEH- … -CR
Sturdy thanks to the all-round enclosed design of the stainless steel housing, including the active surface.

- Solid metal housing V2A-1.4305-AISI303
- For demanding mechanical requirements

- Resists pressure
- Large sensing distances (also for other metals)
- M12, M18, (NO, PNP, NPN, with plug or cable)

Innovative: Inductive proximity sensor SIES-8M
Ideal for sensing intermediate and end positions of electric drives. The only inductive sensor for 8 mm slots with patented status display via two LEDs.
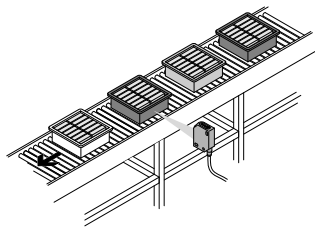
- Tried and tested mounting technology similar to proximity sensors
- Quick positioning and simple mounting using clamping technology
- Perfect visibility, regardless of the direction of approach of the object being sensed

- Repetition accuracy ≤ ±0.05 mm (radial)
- Power supply: 10 to 30 V
- Switching distance: 1.5 mm
- Per EN 60947
- Flush mounting
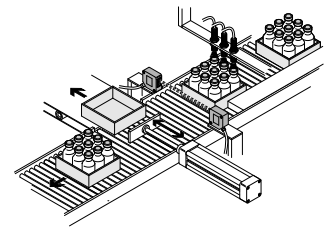- Operating temperature: -25 to +70 ºC

Optical sensors

Thanks to the optical measuring method, SOE series sensors cover a wide range of functions, from detecting colour and miniature components through to laser distance sensing.

Diffuse sensor with background illumination: Sensing of objects irrespective of the surface and colour

Presence detection in automation technology

Standard-compliant design: Optoelectronic sensors SOEG-...-M12/M18/M18W
Standard-compliant design for simple exchange. Numerous

variants such as diffuse sensors, sensors with background suppression, retro-reflective and through-beam sensors, etc.

- Diameters: M12, M18 and M18W (with lateral light emission)
- With plug or cable
- With PNP or NPN output

Miniaturised: Optoelectronic sensors SOE-...-Q20
The new optoelectronic sensor range Q20 with practical Teach-In function. Ideal for restricted installation spaces, offering maximum precision, dynamic

process adaptation and maximum ease of use.
- Size 20 x 32 x 12 mm
- High protection class IP67
- Switching frequency of up to 4,000 Hz
- Reliable adjustment via visible

red light and laser
- Teach-In via keys, remote control via electrical connection. Integrated protection against manipulation.
- Dynamic Teach-In

Compact design: Optoelectronic sensors SOE-...-Q30
Q30 sensors provide maximum performance in a miniature housing. They are compact, extremely sturdy and offer all protective functions. The complete range consists of sensors, very precise

background suppression sensors, retro-reflective sensors, through-beam sensors and fibre-optic units
- Size 30 x 30 x 15 mm
- Resistant to shock and vibration thanks to one-piece moulding

- Precise background suppression
- High operating reserve
- Adjustment via potentiometer

Outstanding: Optical sensors SOE..-Q50

All sensors of the SOE..-Q50 series offer outstanding features such as scaling potentiometers secured against overtravel, numerical scaling, as well as superior display elements and a switching frequency of up to 2,500 Hz.

- Maximum accuracy
- Red light and laser
- Dimensions of just 50 x 50 x 17 mm
- Plug rotatable by 270° for M12 size, in steps of 45°
- Degree of protection IP67
- LEDs for operating status and operating voltage display

Compact: Colour sensor SOEC-RT-Q50

The world's smallest colour sensor. Using just one white light source, and with a standard housing, the SOEC-RT-Q50 can detect objects anywhere within its operating range. Featuring 5 definable limit values, the sensor can be optimally tuned to the colour of the test object.

- The sensor can quickly and easily learn to recognise new colours of an object via its Teach-In function.
- 3 independent channels with Teach-In capability
- Switching frequency 500 Hz
- Dimensions of just 50 x 50 x 17 mm

Small and precise: Fibre-optic cables and fibre-optic units SOE4

These provide precise and space-saving position detection on very complex and compact machines, particularly in the electronics and light assembly industries. For detecting small workpieces (any material) at great distances or high temperatures.

- Highly flexible applications thanks to a choice of three fibre-optic units: without display, with display, or with display and analogue output
- Fast and reliable set-up using simple Teach-In method
- Flexible switchover between four operating modes: standard, fine, fast, long distance
- Up to four fibre-optic units mounted next to one another work in synch to avoid mutual interference

Reliable and efficient: Light barrier sensors SOOF-P and SOOF-M

Easy to install and adjust because emitter and receiver are in a single housing. Traditional metal version or innovative polymer variant with a status display which is visible from all sides.

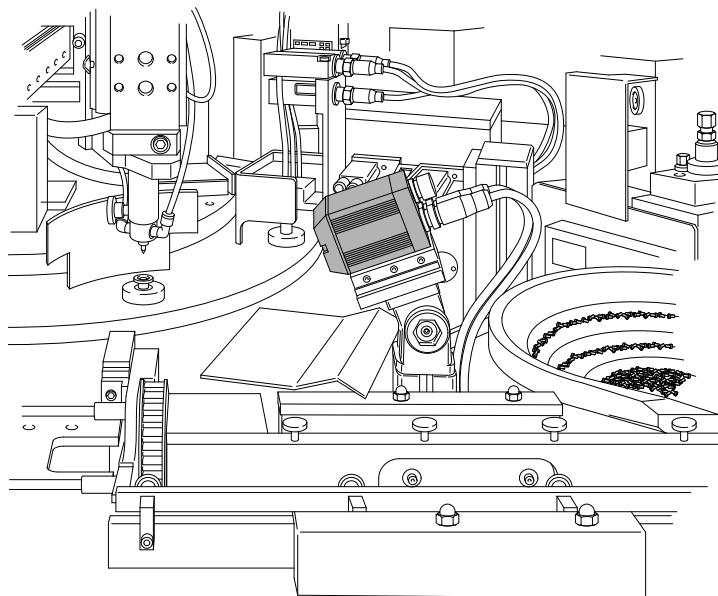- Degree of protection IP67
- Fork widths: 30, 50, 80 and 120 mm
- Numerous mounting types
- Good visibility thanks to red light
- Adjustment by means of Teach-In (SOOF-P) or potentiometer (SOOF-M)
- Accurate, with high resolution and repetition accuracy

Compact vision systems

Sheer economy: the innovative and intelligent camera systems. Thanks to the compact, industrial design and clear interface definition, these versatile vision systems can also be easily integrated into existing installations.

For type, position and rotational position detection: the intelligent compact camera system SBO...Q

Camera system SBOC-M/SBOI-M
Designed to support diagnostics and commissioning as well as function monitoring during fast motion sequences. The innovative and low-cost alternative to conventional high-speed cameras.

- Integrated electronics to record and save motion sequences
- Several cameras can be networked via Ethernet and temporarily synchronisable
- Lens mounting: C-mount
- Working distance: depending on the selected lens

- Field of vision: depending on the selected lens
- Sensor resolution: 640 x 480 pixels
- Frame rate: 200 ... 2000 fps
- Protection class: IP65/IP67

Camera system SBOC-Q/SBOI-Q
Intelligent vision system for precision positioning of axes, type identification, position detection and 2D quality inspection of moving parts and parts at rest. Plus: OCR and reading 1/2-D code
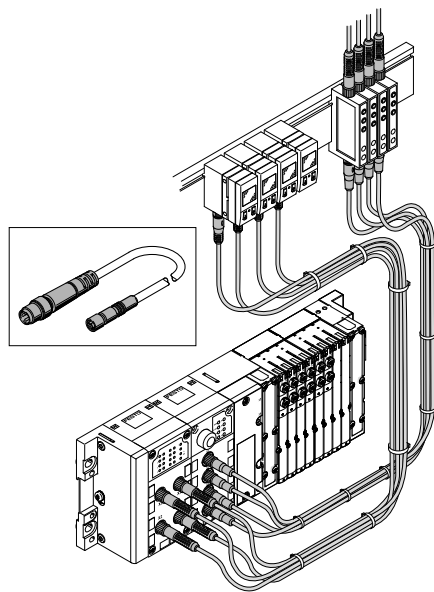
- Sensor resolutions: 640 x 480, 752 x 480 or 1280 x 1024 pixels (monochrome and colour)
- Standardised software interface using Ethernet, as well as 24 V I/O
- Protection class: IP65/IP67

- Integrated PLC run-time system (CoDeSys 2.3)
- CANopen master functionality in connection with CoDeSys
- Lens mounting: integrated lens or C-mount
- Compact dimensions, low weight

Connection technology

Fits and functions smoothly:
the sensor portfolio from Festo
Ideally matched to each other,
the modular cable system NEBU
connects field devices and
controllers – connection prob-
lems are a thing of the past.

Connect quickly and easily over ranges of up to 30 m with the modular cable system NEBU

Combination options:
Modular cable system NEBU
Find the ideal connection quickly
with the modular system for con-
necting cables. It provides
unlimited combination possibili-
ties including sockets, various
cable lengths and qualities, and
plugs – inexpensively, reliably
and flexibly. Matched to all
devices with M5, M8 and M12
plugs such as proximity sensors,
position transmitters, pressure
and flow sensors, optical and
inductive sensors, as well as
individual valves. Cable lengths
are freely selectable within a
range of 0.1 to 30 m.

Remote control:
Signal converter SVE4
The signal converter SVE4 con-
verts the analogue output signal
from a sensor into switching
points that can be taught in
directly on the signal converter.
They are ideal wherever the
accessibility of sensors is
limited.
• Two switching outputs, which
  can be configured independ-
  ently of one another as thresh-
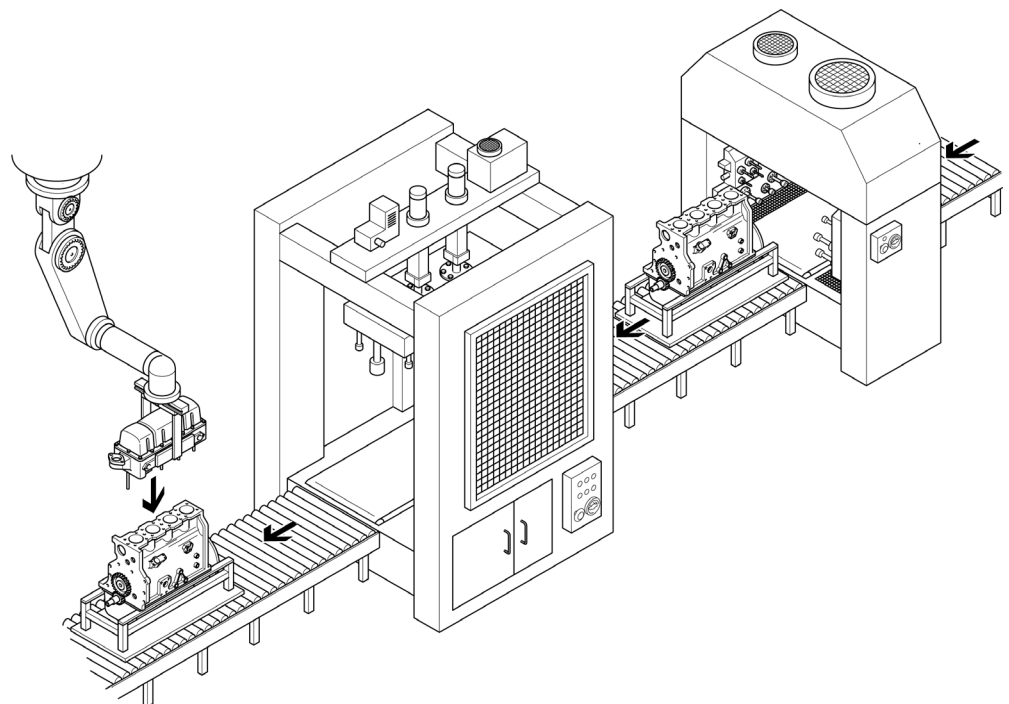 old value, hysteresis or win-
dow comparators as required
• Quick installation without
  interrupting the operation
  of the system
• Simple commissioning thanks
  to the integrated Teach-In
  function

Industry-specific sensors

All kinds of industries rely on the first-rate products and services offered by Festo and thus enjoy a mutually beneficial partnership. This also includes application-optimised products for even greater productivity and enhanced process reliability – with everything for process automation and the automotive industry from a single source.

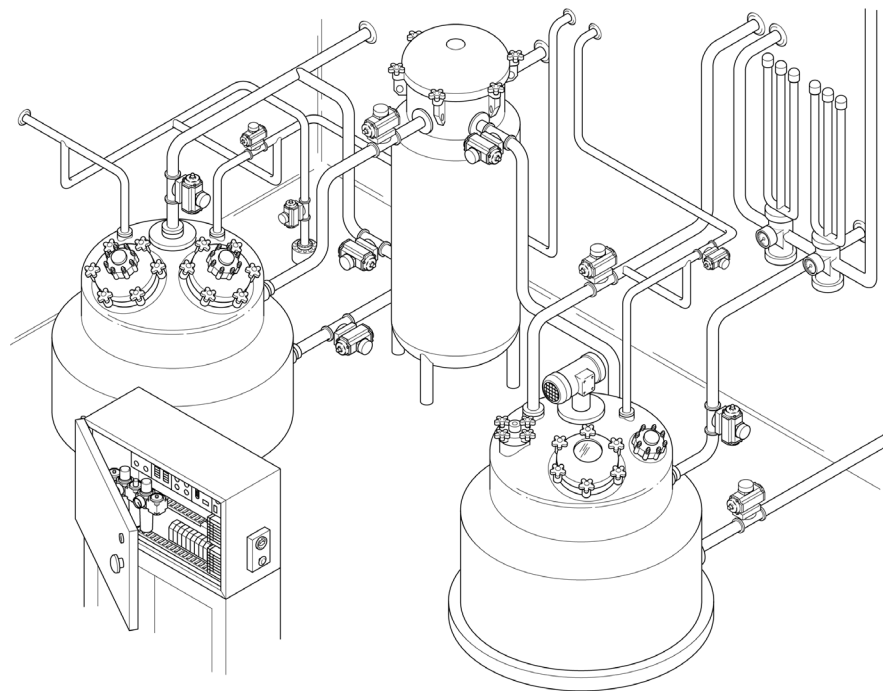Automotive industry and machine tool industry

Precise and reliable:
Air gap sensors SOPA

The reliable, attractively priced compact solution for workpiece contact monitoring with micron precision when machining engine parts. It comes fully equipped with a controller module, compressed air regulator, measuring air shut-off valve,

air jet function and up to 4 measuring modules. An additional advantage: up to 4 air gap sensors can be configured on a modular basis and pneumatically linked.

- Detection of 2 different distances with distance correlation is possible

- Distance detection at workpieces with 2 different types of surface roughness
- Measuring range: 20 … 200 μm
- Operating pressure: 4 … 7 bar
- Switching value: ±2.5 μm
- Freely programmable switching function
- Protection: IP65

Automation process

Systematically safe: Sensor boxes DAPZ, QH-DR-E
Systematic safety in the process industry: reliable, overload-proof and durable end-position detection in valve control systems – even in areas with potentially explosive atmospheres

- Inductive, pneumatic or electrical (microswitch)
- Large visual display, visible from all sides
- Simple mounting options on semi-rotary valve actuators

(Namur interface)
- AS-interface variant available
- Can also be used with 3-way ball valves
- Highly flexible: choice of mounting bridges, various voltage ratings, explosion-proof variants

New generation: Sensor boxes SRBP/SRAP
From sensing the mid-position to the analogue feedback signal in 4 … 20 mA of the valve position, the new sensor boxes offer completely innovative possibilities.

- Reliable Reed (SRBP) and Hall (SRAP) technologies
- Visual position indication in 3D for valve position and flow direction
- Direct mounting on DFPB without adapter bridges

- Adjustable working range 0° … 270°
- Protection class IP65 and CRC 3
- Explosion-proof for zone II 3 GD
- Optionally with integrated valve port