



SpareCruX

MPA-971THTPO

MPA

CYLINDER SENSORS

SICK
Sensor Intelligence.



Ordering information

| Type | part no. |
|--------------|----------|
| MPA-971THTPO | 1059478 |

Other models and accessories → www.sick.com/MPA



Detailed technical data

Features

| | |
|------------------------------------|---|
| Cylinder type | Universal |
| Cylinder types with adapter | Round body cylinder Tie rod cylinder T-slot cylinders Festo cylinders DSBC SMC cylinders CP96 |
| Measuring range | 971 mm ¹⁾ |
| Housing length | 973 mm |
| Output function | Analog, IO-Link |
| Electrical wiring | DC 4-wire |
| Analog output (voltage) | 0 V ... 10 V |
| Analog output (current) | 4 mA ... 20 mA ²⁾ |
| Enclosure rating | IP65 ³⁾ IP67 IP68 |
| Adjustment | |
| Teach-in control panel | Teaching in the measuring range Selecting the current/voltage output or IO-Link Resetting the measuring range to factory settings |
| IO-Link | Teaching in the measuring range Resetting the measuring range |
| IO-Link functions | Standard functions |

¹⁾ ± 1 mm.

²⁾ Default setting: Current output active.

³⁾ According to EN 60529.

Mechanics/electronics

| | |
|--|--|
| Supply voltage | 15 V DC ... 30 V DC |
| Power consumption | 35 mA, without load |
| Max. load resistance | ≤ 500 Ω Power Output, at 24 V |
| Min. load resistance | ≥ 2 kΩ ¹⁾ |
| Protection class | III |
| Required magnetic field sensitivity, typ. | 2 mT ... 15 mT |
| Resolution, typ. | 0.03 % FSR (max. ≥ 0.06 mm) ²⁾ ³⁾ |
| Linearity error, typ. | 0.5 mm ⁴⁾ |
| Repeat accuracy, typ. | 0.06 % FSR (≥ 0.1 mm) ⁵⁾ |
| Sampling rate, typ. | 1.15 ms ⁶⁾ |
| Reverse polarity protection | Yes |
| Short-circuit protection | Yes |
| Status indicator LED | Yes |
| Teach-in | Yes |
| Ambient operating temperature | -20 °C ... +70 °C |
| Shock and vibration resistance | 30 g, 11 ms/10 Hz ... 55 Hz, 1 mm |
| EMC | According to EN 60947-5-2 ⁷⁾ |
| Connection type | Cable with M8 male connector, 4-pin, 0.3 m |
| Connection type Detail | |
| Deep-freeze property | Do not bend below 0 °C |
| Conductor cross section | 0.08 mm ² |
| Cable diameter | Ø 2.6 mm |
| Bending radius | With fixed installation > 5 x cable diameter For flexible use > 10 x cable diameter |
| Cable outlet | Axial |
| Material | |
| Housing | Metal, Aluminum Plastic |
| Cable | PUR |
| UL File No. | NRKH.E181493 & NRKH7.E181493 |

¹⁾ Voltage output.

²⁾ FSR: Full Scale Range; max. measuring range.

³⁾ When using IO-Link, the resolution is 0.25 mm.

⁴⁾ At 25 °C, linearity error (maximum deviation) depending on response curve and minimal deviation function.

⁵⁾ At 25 °C, repeatability magnet movement in one direction.

⁶⁾ Only in standard mode, not in IO-Link mode.

⁷⁾ The analog measured value can deviate under transient conditions.

Safety-related parameters

| | |
|-------------------------|----------|
| MTTF_D | 83 years |
| DC_{avg} | 0 % |

| | |
|-------------------------------------|----------|
| T_M (mission time) | 20 years |
|-------------------------------------|----------|

Communication interface

| | |
|---------------------------------------|--|
| Communication interface | IO-Link V1.0.1 |
| Communication Interface detail | COM2 |
| Cycle time | 2.3 ms |
| Process data length | 16 Bit |
| Process data structure | Bit 0 ... 3 = reserved Bit 4 ... 5 = position (after decimal point) Bit 6 ... 15 = position (before decimal point) |

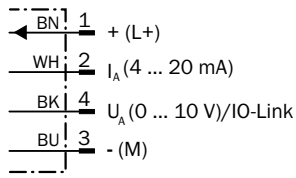
Certificates

| | |
|--|---|
| EU declaration of conformity | ✓ |
| UK declaration of conformity | ✓ |
| ACMA declaration of conformity | ✓ |
| Moroccan declaration of conformity | ✓ |
| China RoHS | ✓ |
| cULus certificate | ✓ |
| IO-Link certificate | ✓ |
| Information according to Art. 3 of Data Act (Regulation EU 2023/2854) | ✓ |

Classifications

| | |
|-----------------------|----------|
| ECLASS 5.0 | 27270104 |
| ECLASS 5.1.4 | 27270104 |
| ECLASS 6.0 | 27270104 |
| ECLASS 6.2 | 27270104 |
| ECLASS 7.0 | 27270104 |
| ECLASS 8.0 | 27270104 |
| ECLASS 8.1 | 27270104 |
| ECLASS 9.0 | 27270104 |
| ECLASS 10.0 | 27270104 |
| ECLASS 11.0 | 27270104 |
| ECLASS 12.0 | 27274301 |
| ETIM 5.0 | EC002544 |
| ETIM 6.0 | EC002544 |
| ETIM 7.0 | EC002544 |
| ETIM 8.0 | EC002544 |
| UNSPSC 16.0901 | 39122230 |

Connection diagram Cd-230



Dimensional drawing Cable with M8 male connector, 4-pin



| | Total length (L1) mm | Measuring range (L2) mm | Total length (L1) mm | Measuring range (L2) mm |
|----------------|----------------------|-------------------------|----------------------|-------------------------|
| MPA-107 | 109 | 107 | MPA-575 | 575 |
| MPA-143 | 145 | 143 | MPA-611 | 611 |
| MPA-179 | 181 | 179 | MPA-647 | 647 |
| MPA-215 | 217 | 215 | MPA-683 | 683 |
| MPA-251 | 253 | 251 | MPA-719 | 719 |
| MPA-287 | 289 | 287 | MPA-755 | 755 |
| MPA-323 | 325 | 323 | MPA-791 | 791 |
| MPA-359 | 361 | 359 | MPA-827 | 827 |
| MPA-395 | 397 | 395 | MPA-863 | 863 |
| MPA-431 | 433 | 431 | MPA-899 | 899 |
| MPA-467 | 469 | 467 | MPA-935 | 935 |
| MPA-503 | 505 | 503 | MPA-971 | 971 |
| MPA-539 | 541 | 539 | MPA-1007 | 1,007 |




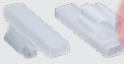

- Dimensions in mm (inch)
- ① Function signal indicator 1
 - ② Function signal indicator 2
 - ③ Teach-Pad
 - ④ Connection





Recommended accessories

Other models and accessories → www.sick.com/MPA

| | Brief description | Type | part no. |
|---|--|-----------------|----------|
| Mounting systems | | | |
|  | <ul style="list-style-type: none"> Description: For round body cylinders with diameter up to 85 mm Material: Stainless steel Details: Stainless steel V2A Usable for: MPA-107 mm ... 359 mm (measuring range sensor), 2 (recommended number brackets), MPA-395 mm ... 647 mm (measuring range sensor), 3 (recommended number brackets), MPA-683 mm ... 935 mm (measuring range sensor), 4 (recommended number brackets), MPA-971 mm ... 1,007 mm (measuring range sensor), 5 (recommended number brackets) | BEF-KHZR085MPA | 2066626 |
|  | <ul style="list-style-type: none"> Description: For round body cylinders with diameter up to 135 mm Material: Stainless steel Details: Stainless steel V2A Usable for: MPA-107 mm ... 359 mm (measuring range sensor), 2 (recommended number brackets), MPA-395 mm ... 647 mm (measuring range sensor), 3 (recommended number brackets), MPA-683 mm ... 935 mm (measuring range sensor), 4 (recommended number brackets), MPA-971 mm ... 1,007 mm (measuring range sensor), 5 (recommended number brackets) | BEF-KHZR135MPA | 2066627 |
|  | <ul style="list-style-type: none"> Description: For round body cylinders with diameter up to 210 mm Material: Stainless steel Details: Stainless steel V2A Usable for: MPA-107 mm ... 359 mm (measuring range sensor), 2 (recommended number brackets), MPA-395 mm ... 647 mm (measuring range sensor), 3 (recommended number brackets), MPA-683 mm ... 935 mm (measuring range sensor), 4 (recommended number brackets), MPA-971 mm ... 1,007 mm (measuring range sensor), 5 (recommended number brackets) | BEF-KHZR210MPA | 2066628 |
|  | <ul style="list-style-type: none"> Description: For tie-rod cylinder (diameter tie-rod max. 18 mm) Material: Aluminum, stainless steel Details: Aluminum alloy (adapter), Stainless steel V2A (mounting-/fixing screw) Usable for: MPA-107 mm ... 251 mm (sensor measuring range), 2 (recommended number of brackets), MPA-287 mm ... 431 mm (measuring range sensor), 3 (recommended number mounting brackets), MPA-467 mm ... 647 mm (measuring range sensor), 4 (recommended number mounting brackets), MPA-683 mm ... 791 mm (measuring range sensor), 5 (recommended number mounting brackets), MPA-827 mm ... 1007 mm (measuring range sensor), 6 (recommended number mounting brackets) | BEF-KHZPZ1MPA | 2065578 |
|  | <ul style="list-style-type: none"> Description: For T-slot cylinders Material: Stainless steel, brass Details: Stainless steel V2A (bracket/mounting screw), Brass (fixing screw/sliding nut) Usable for: MPA-107 mm ... 251 mm (sensor measuring range), 2 (recommended number of brackets), MPA-287 mm ... 431 mm (measuring range sensor), 3 (recommended number mounting brackets), MPA-467 mm ... 647 mm (measuring range sensor), 4 (recommended number mounting brackets), MPA-683 mm ... 791 mm (measuring range sensor), 5 (recommended number mounting brackets), MPA-827 mm ... 1007 mm (measuring range sensor), 6 (recommended number mounting brackets) | BEF-KHZT01MPA | 2065575 |
|  | <ul style="list-style-type: none"> Description: Bracket for lateral mounting Material: Stainless steel, brass Details: Stainless steel V2A (bracket/mounting screw), Brass (fixing screw) Usable for: MPA-107 mm ... 251 mm (sensor measuring range), 2 (recommended number of brackets), MPA-287 mm ... 431 mm (measuring range sensor), 3 (recommended number mounting brackets), MPA-467 mm ... 647 mm (measuring range sensor), 4 (recommended number mounting brackets), MPA-683 mm ... 791 mm (measuring range sensor), 5 (recommended number mounting brackets), MPA-827 mm ... 1007 mm (measuring range sensor), 6 (recommended number mounting brackets) | BEF-WNZ01MPA | 2065577 |
|  | <ul style="list-style-type: none"> Description: Bracket for low mounting Material: Stainless steel, brass Details: Stainless steel V2A (bracket/mounting screw), Brass (fixing screw) Usable for: MPA-107 mm ... 251 mm (sensor measuring range), 2 (recommended number of brackets), MPA-287 mm ... 431 mm (measuring range sensor), 3 (recommended number mounting brackets), MPA-467 mm ... 647 mm (measuring range sensor), 4 (recommended number mounting brackets), MPA-683 mm ... 791 mm (measuring range sensor), 5 (recommended number mounting brackets), MPA-827 mm ... 1007 mm (measuring range sensor), 6 (recommended number mounting brackets) | BEF-WNL01MPA | 2065973 |
|  | <ul style="list-style-type: none"> Description: Sensor adapter DSBC-32 Dimensions (W x H x L): 10 mm x 16.9 mm x 43.4 mm Material: Stainless steel Details: Stainless steel V2A Usable for: MPA-107 mm ... 251 mm (sensor measuring range), 2 (recommended number of brackets), MPA-287 mm ... 431 mm (measuring range sensor), 3 (recommended number mounting brackets), MPA-467 mm ... 647 mm (measuring range sensor), 4 (recommended number mounting brackets), MPA-683 mm ... 791 mm (measuring range sensor), 5 (recommended number mounting brackets) | BEF-KHZPF032MPA | 2086744 |

| | Brief description | Type | part no. |
|---|--|-----------------|----------|
|  | <p>mounting brackets), MPA-827 mm ... 1007 mm (measuring range sensor), 6 (recommended number mounting brackets)</p> <ul style="list-style-type: none"> • Description: Sensor adapter DSBC-40 • Dimensions (W x H x L): 10 mm x 16.9 mm x 48.9 mm • Material: Stainless steel • Details: Stainless steel V2A • Usable for: MPA-107 mm ... 251 mm (sensor measuring range), 2 (recommended number of brackets), MPA-287 mm ... 431 mm (measuring range sensor), 3 (recommended number mounting brackets), MPA-467 mm ... 647 mm (measuring range sensor), 4 (recommended number mounting brackets), MPA-683 mm ... 791 mm (measuring range sensor), 5 (recommended number mounting brackets), MPA-827 mm ... 1007 mm (measuring range sensor), 6 (recommended number mounting brackets) | BEF-KHZPF040MPA | 2086745 |
|  | <ul style="list-style-type: none"> • Description: Sensor adapter DSBC-50 • Dimensions (W x H x L): 10 mm x 16.9 mm x 51.7 mm • Material: Stainless steel • Details: Stainless steel V2A • Usable for: MPA-107 mm ... 251 mm (sensor measuring range), 2 (recommended number of brackets), MPA-287 mm ... 431 mm (measuring range sensor), 3 (recommended number mounting brackets), MPA-467 mm ... 647 mm (measuring range sensor), 4 (recommended number mounting brackets), MPA-683 mm ... 791 mm (measuring range sensor), 5 (recommended number mounting brackets), MPA-827 mm ... 1007 mm (measuring range sensor), 6 (recommended number mounting brackets) | BEF-KHZPF050MPA | 2086746 |
|  | <ul style="list-style-type: none"> • Description: Sensor adapter DSBC-63 • Dimensions (W x H x L): 10 mm x 16.9 mm x 53.1 mm • Material: Stainless steel • Details: Stainless steel V2A • Usable for: MPA-107 mm ... 251 mm (sensor measuring range), 2 (recommended number of brackets), MPA-287 mm ... 431 mm (measuring range sensor), 3 (recommended number mounting brackets), MPA-467 mm ... 647 mm (measuring range sensor), 4 (recommended number mounting brackets), MPA-683 mm ... 791 mm (measuring range sensor), 5 (recommended number mounting brackets), MPA-827 mm ... 1007 mm (measuring range sensor), 6 (recommended number mounting brackets) | BEF-KHZPF063MPA | 2086747 |
|  | <ul style="list-style-type: none"> • Description: Sensor adapter DSBC-80 • Dimensions (W x H x L): 10 mm x 16.9 mm x 58.4 mm • Material: Stainless steel • Details: Stainless steel V2A • Usable for: MPA-107 mm ... 251 mm (sensor measuring range), 2 (recommended number of brackets), MPA-287 mm ... 431 mm (measuring range sensor), 3 (recommended number mounting brackets), MPA-467 mm ... 647 mm (measuring range sensor), 4 (recommended number mounting brackets), MPA-683 mm ... 791 mm (measuring range sensor), 5 (recommended number mounting brackets), MPA-827 mm ... 1007 mm (measuring range sensor), 6 (recommended number mounting brackets) | BEF-KHZPF080MPA | 2086748 |
|  | <ul style="list-style-type: none"> • Description: Sensor adapter DSBC-100 • Dimensions (W x H x L): 10 mm x 17 mm x 59.8 mm • Material: Stainless steel • Details: Stainless steel V2A • Usable for: MPA-107 mm ... 251 mm (sensor measuring range), 2 (recommended number of brackets), MPA-287 mm ... 431 mm (measuring range sensor), 3 (recommended number mounting brackets), MPA-467 mm ... 647 mm (measuring range sensor), 4 (recommended number mounting brackets), MPA-683 mm ... 791 mm (measuring range sensor), 5 (recommended number mounting brackets), MPA-827 mm ... 1007 mm (measuring range sensor), 6 (recommended number mounting brackets) | BEF-KHZPF100MPA | 2086749 |
|  | <ul style="list-style-type: none"> • Description: Sensor adapter DSBC-125 • Dimensions (W x H x L): 10 mm x 22.5 mm x 63.7 mm • Material: Stainless steel • Details: Stainless steel V2A • Usable for: MPA-107 mm ... 251 mm (sensor measuring range), 2 (recommended number of brackets), MPA-287 mm ... 431 mm (measuring range sensor), 3 (recommended number mounting brackets), MPA-467 mm ... 647 mm (measuring range sensor), 4 (recommended number mounting brackets), MPA-683 mm ... 791 mm (measuring range sensor), 5 (recommended number mounting brackets), MPA-827 mm ... 1007 mm (measuring range sensor), 6 (recommended number mounting brackets) | BEF-KHZPF125MPA | 2086750 |
|  | <ul style="list-style-type: none"> • Description: Sensor adapter CP96-63 • Dimensions (W x H x L): 10 mm x 11.7 mm x 12.6 mm • Material: Stainless steel • Details: Stainless steel V2A • Usable for: MPA-107 mm ... 251 mm (sensor measuring range), 2 (recommended number of brackets), MPA-287 mm ... 431 mm (measuring range sensor), 3 (recommended number mounting brackets), MPA-467 mm ... 647 mm (measuring range sensor), 4 (recommended number mounting brackets), MPA-683 mm ... 791 mm (measuring range sensor), 5 (recommended number mounting brackets) | BEF-KHZTS063MPA | 2086756 |

| | Brief description | Type | part no. |
|---|--|-----------------|----------|
|  | <p>mounting brackets), MPA-827 mm ... 1007 mm (measuring range sensor), 6 (recommended number mounting brackets)</p> <ul style="list-style-type: none"> Description: Sensor adapter CP96-80 Dimensions (W x H x L): 10 mm x 13.7 mm x 14.8 mm Material: Stainless steel Details: Stainless steel V2A Usable for: MPA-107 mm ... 251 mm (sensor measuring range), 2 (recommended number of brackets), MPA-287 mm ... 431 mm (measuring range sensor), 3 (recommended number mounting brackets), MPA-467 mm ... 647 mm (measuring range sensor), 4 (recommended number mounting brackets), MPA-683 mm ... 791 mm (measuring range sensor), 5 (recommended number mounting brackets), MPA-827 mm ... 1007 mm (measuring range sensor), 6 (recommended number mounting brackets) | BEF-KHZTS080MPA | 2086757 |
|  | <ul style="list-style-type: none"> Description: Sensor adapter CP96-100 Dimensions (W x H x L): 10 mm x 12.9 mm x 14.8 mm Material: Stainless steel Details: Stainless steel V2A Usable for: MPA-107 mm ... 251 mm (sensor measuring range), 2 (recommended number of brackets), MPA-287 mm ... 431 mm (measuring range sensor), 3 (recommended number mounting brackets), MPA-467 mm ... 647 mm (measuring range sensor), 4 (recommended number mounting brackets), MPA-683 mm ... 791 mm (measuring range sensor), 5 (recommended number mounting brackets), MPA-827 mm ... 1007 mm (measuring range sensor), 6 (recommended number mounting brackets) | BEF-KHZTS100MPA | 2086758 |
|  | <ul style="list-style-type: none"> Description: Sensor adapter CP96-125 Dimensions (W x H x L): 10 mm x 12.2 mm x 14.6 mm Material: Stainless steel Details: Stainless steel V2A Usable for: MPA-107 mm ... 251 mm (sensor measuring range), 2 (recommended number of brackets), MPA-287 mm ... 431 mm (measuring range sensor), 3 (recommended number mounting brackets), MPA-467 mm ... 647 mm (measuring range sensor), 4 (recommended number mounting brackets), MPA-683 mm ... 791 mm (measuring range sensor), 5 (recommended number mounting brackets), MPA-827 mm ... 1007 mm (measuring range sensor), 6 (recommended number mounting brackets) | BEF-KHZTS125MPA | 2086759 |
|  | <ul style="list-style-type: none"> Description: Label Holder, 2.5 mm to 3.5 mm, 10 pcs. Material: Plastic Details: TPU Packing unit: 10 pieces | LABEL HOLDER | 2086019 |
| magnets | | | |
|  | <ul style="list-style-type: none"> Product segment: Magnets Product: Position magnets Description: Magnet with mounting hole for M3 countersunk screw, Ø 15.2 mm, height 6 mm Material: Hard ferrite | Magnet | 5327349 |

| | Brief description | Type | part no. |
|---|---|--------------------|----------|
| connectors and cables | | | |
|  | <ul style="list-style-type: none"> • Connection type head A: Female connector, M8, 4-pin, angled, A-coded • Description: Unshielded • Connection systems: Solder connection • Permitted cross-section: ≤ 0.25 mm² | DOS-0804-W | 6009975 |
|  | <ul style="list-style-type: none"> • Connection type head A: Female connector, M8, 4-pin, straight, A-coded • Description: Unshielded • Connection systems: Screw-type terminals • Permitted cross-section: 0.14 mm² ... 0.5 mm² | DOS-0804-G | 6009974 |
|  | <ul style="list-style-type: none"> • Connection type head A: Male connector, M8, 4-pin, straight, A-coded • Description: Unshielded • Connection systems: Screw-type terminals • Permitted cross-section: 0.14 mm² ... 0.5 mm² | STE-0804-G | 6037323 |
|  | <ul style="list-style-type: none"> • Connection type head A: Female connector, M8, 4-pin, straight, A-coded • Connection type head B: Flying leads • Signal type: Sensor/actuator cable • Cable: 0.6 m, 4-wire, PUR, halogen-free • Description: Sensor/actuator cable, unshielded • Application: Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation | YF8U14-C60UA3XLEAX | 2145825 |
|  | <ul style="list-style-type: none"> • Connection type head A: Female connector, M8, 4-pin, straight, A-coded • Connection type head B: Flying leads • Signal type: Sensor/actuator cable • Cable: 1 m, 4-wire, PUR, halogen-free • Description: Sensor/actuator cable, unshielded • Application: Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation | YF8U14-010UA3XLEAX | 2145826 |



SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is “Sensor Intelligence.”

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