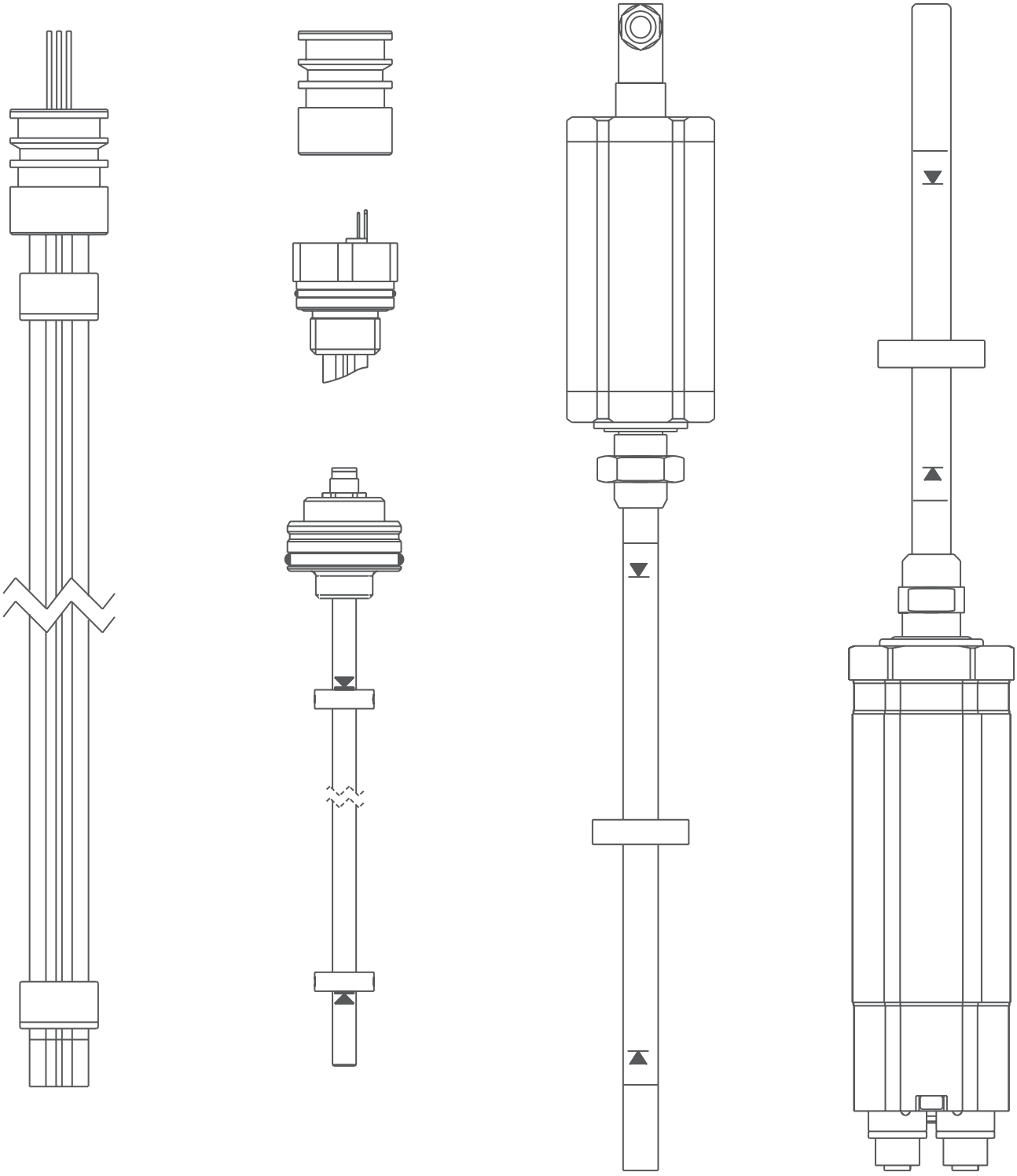
OPKON®

*Sense the motion*

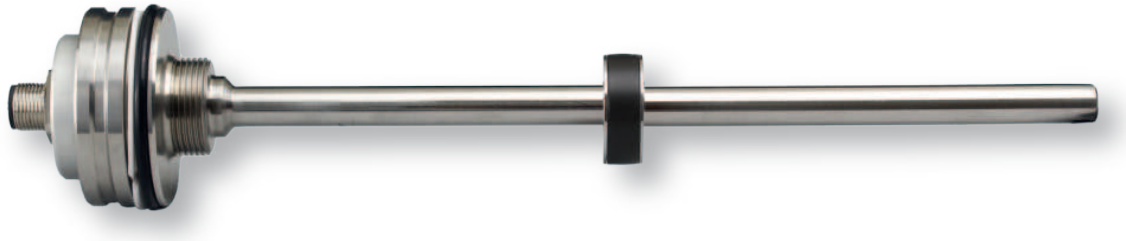


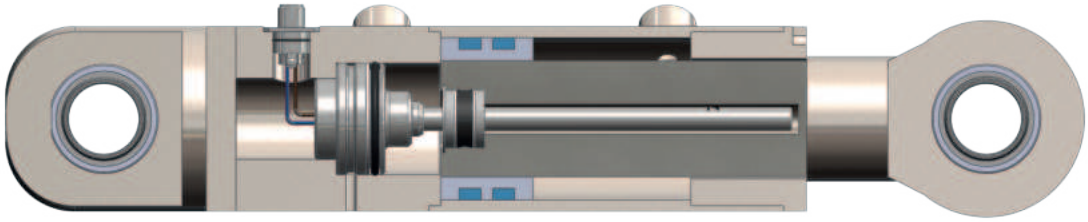
# MOBILE HYDRAULIC POSITION SENSORS IN - CYLINDER APPLICATIONS

# MSP

## Non-Contact Magnetostrictive Position Sensor
## In-Hydraulic Cylinders

ANALOG V / mA | Sensopulse® MAGNETOSTRICTIVE



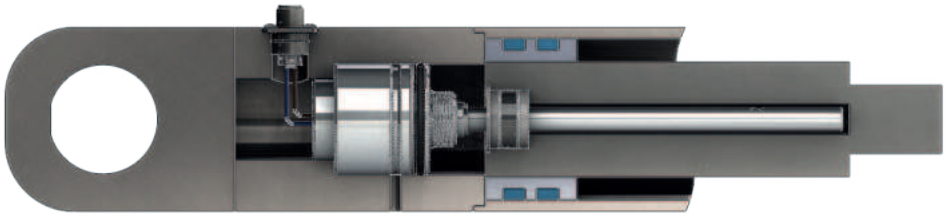


| Technical Specifitaions | |
|---|---|
| Measurement stroke | 50 - 1500 mm |
| Resolution | 15 bit DAC |
| Repeatability | 100 µm |
| Output | 0-20mA, 4-20mA |
| Power supply | 24 VDC ±10% |
| Displacement speed | <5 m/s |
| Linearity | 50-100 mm < %1, 100-300 mm < %0.2, 300-500 mm < %0.1, 500-1500 mm > %0.05 |
| Sampling rate | Up to 2 kHz (depening on stroke length) |
| Vibration | EN 60068-2-6 , 5-200 Hz 200 m/s2 (20g) , 2h 30 min. each axis (x,y,z) |
| Shock | EN 60068-2-2:2007 500 m/s2 (50g), 11ms. (x,y,z axis) |
| Update time | (0-600 mm, 0,5 ms), (600-1500 mm, 1 ms) |
| Max. consumption | < 50 mA - 90 mA (depening on stroke length) |
| Max. output noice | < 5 mVpp |
| Load resistance | max. 500 Ohm |
| Reverse polarity protection | Up to -30 VDC |
| Overvoltage protection | Up to +30 VDC |
| Pressure raiting | < 500 bar |
| Sealing | O-ring: NBR<br>Backup Ring: PTFE |
| Mechanical fixing | M24 x 1.5<br>Flat |
| Case material | Case: Stainless steel, Tube: Stainless steel, Caps: Anodized aluminium |
| Protection level | IP 67 |
| Operating temperature | -10°C ... +70°C |
| Storage temperature | -30°C ... +90°C |

# MSPB

## Non-Contact Magnetostrictive Position Sensor
## In-Hydraulic Cylinders

ANALOG V / mA | Sensopulse® MAGNETOSTRICTIVE



| Technical Specifications | |
|---|---|
| Measurement stroke | 50 - 1500 mm |
| Resolution | 15 bit DAC output |
| Repeatability | 100 µm |
| Output | 0-20mA, 4-20mA |
| Power supply | 24 VDC ±10% |
| Displacement speed | max. <5 m/s |
| Linearity | 50-100 mm < %1, 100-300 mm < %0.2, 300-500 mm < %0.1, 500-1500 mm > %0.05 |
| Sampling rate | Up to 2 kHz (depending on stroke length) |
| Vibration | EN 60068-2-6 , 5-200 Hz<br>200 m/s2 (20g) , 2h 30min each axis (x,y,z) |
| Shock | EN 60068-2-2:2007<br>500 m/s2 (50g) , 11ms. (x,y,z axis) |
| Update time | (0-600 mm, 0,5 ms), (600-1500 mm, 1 ms) |
| Max. consumption | < 50 mA - 90 mA (depending on stroke length) |
| Max. output noise | < 5 mVpp |
| Load resistance | max. 500 Ohm |
| Reverse polarity protection | Up to -30 VDC |
| Overvoltage protection | Up to 30 VDC |
| Pressure rating | < 500 bar |
| Sealing | O-ring: NBR, Backup Ring: PTFE |
| Mounting | M18 x 1.5 or 3/4"-16 UNF, O-ring or Flat |
| Case material | Profile :Anodized aluminium, Tube: Stainless steel, Caps: Stainless steel |
| Protection level | IP 67 |
| Operating temperature | -10°C ... +70°C |
| Storage temperature | -30°C ... +90°C |

# MSPF

## Internal / Extarnal Mounting Hydraulic Cylinders Magnetostrictive Position Sensor

ANALOG V / mA | Sensopulse® MAGNETOSTRICTIVE

| Technical Specifitaions | |
|---|---|
| Measurement stroke | 50 - 1500 mm |
| Resolution | 15 bit DAC |
| Repeatability | 100 µm |
| Output | 0-20mA, 4-20mA |
| Power supply | 24 VDC ±10% |
| Displacement speed | <5 m/s |
| Linearity | 50-100 mm < %1, 100-300 mm < %0.2, 300-500 mm < %0.1, 500-1500 mm > %0.05 |
| Sampling rate | Up to 2 kHz (depening on stroke length) |
| Vibration | EN 60068-2-6 , 5-200 Hz 200 m/s2 (20g) , 2h 30 min. each axis (x,y,z) |
| Shock | EN 60068-2-2:2007 500 m/s2 (50g), 11ms. (x,y,z axis) |
| Update time | (0-600 mm, 0,5 ms), (600-1500 mm, 1 ms) |
| Max. consumption | < 50 mA - 90 mA (depening on stroke length) |
| Load resistance | max. 500 Ohm |
| Reverse polarity protection | Up to -30 VDC |
| Overvoltage protection | Up to +30 VDC |
| Pressure raiting | < 500 bar |
| Sealing | O-ring: NBR |
| Mechanical fixing | M18 x 1.5 or 3/4 ¨-16 UNF<br>O-ring |
| Case material | Case: Stainless steel, Tube: Stainless steel, Caps: Anodized aluminium |
| Protection level | IP 67 |
| Operating temperature | -10°C ... +70°C |
| Storage temperature | -30°C ... +90°C |

# MST

## Non-Contact Magnetostrictive Position Sensor
## In-Hydraulic Cylinders

ANALOG V / mA | Sensopulse® MAGNETOSTRICTIVE

| Technical Specifications | |
|---|---|
| Measurement stroke | 50 - 5000 mm |
| Resolution | 12-16 bit DAC output |
| Linearity | 50-100 mm < %1, 100-300 mm < %0.2, 300-500 mm < %0.1, 500-5000 mm > %0.05 |
| Repeatability | ±0,01% (full scale) |
| Output | 0-10V, 10-0V, 0-20 mA, 20-0 mA, 4-20 mA, 20-4 mA<br>(Speed information can be provided optionaly.) |
| Power supply | 24 VDC (22 -26V) |
| Displacement speed | < 5 m/s |
| Update time | (0-600mm, 0,5ms), (600-1500mm, 1ms), (1500-3000mm, 2ms), (1501-5000mm, 3ms) |
| Max. consumption | 50 mA - 90 mA (depending on stroke length) |
| Max. output noise | < 5 mVpp |
| Reverse polarity protection | Up to -30 VDC |
| Overvoltage protection | Up to +30 VDC |
| Vibration | EN 60068-2-6 , 5-200 Hz<br>200 m/s2 (20g) , 2h 30 min. each axis (x,y,z) |
| Shock | EN 60068-2-2:2007<br>500 m/s2 (50g) , 11ms. (x,y,z axis) |
| Case dimensions | 33 mm x 33 mm |
| Case material | Anodized aluminium |
| Rod dimensions | Ø6 mm |
| Rod material | Stainless steel |
| Mechanical fixing | Variable brackets |
| Protection level | IP 65 |
| Operating temperature | -10°C ... +70°C |
| Storage temperature | -30°C ... +90°C |

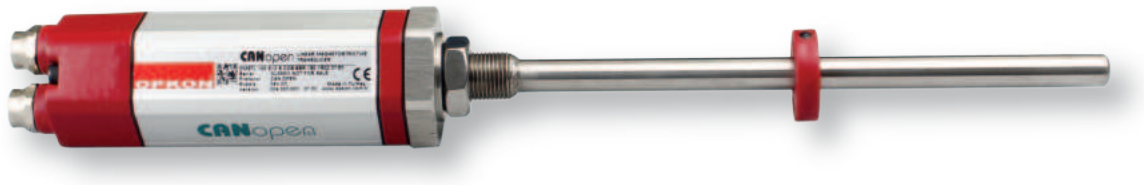
# DMST

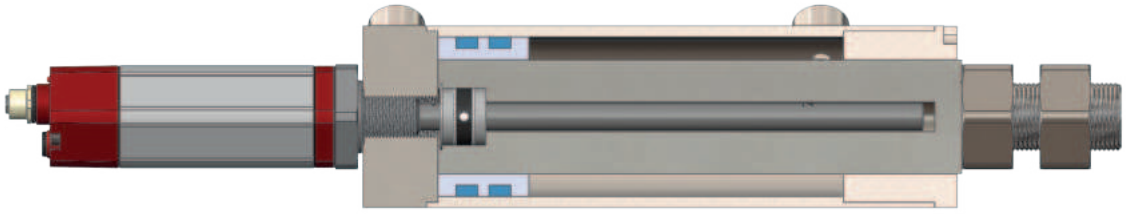
## In-Hydraulic Cylinders

## Non-Contact Magnetostrictive Position Sensor Digital Output

DIGITAL MAGNETOSTRICTIVE

MAGNETOSTRICTIVE





| PROFINET - Technical Specifications | |
|---|---|
| Interface | PROFINET IO |
| Protocol | PROFINET Ethernet 100 Base-Tx to IEEE 802.x |
| Baud rate | 10 Mbit/s max. |
| Green LED | Power on,PROFINET communication active |
| Red LED | Error, stop mode |

| EtherCAT - Technical Specifications | |
|---|---|
| Interface | EtherCAT |
| Protocol | EtherCAT 100 Base-Tx,Fast ethernet |
| Baud rate | maX. 100 Mbit/s |
| Green LED | Power on,EtherCAT communication active |
| Red LED | Error, stop mode |

| CANbus - Technical Specifications | |
|---|---|
| Interface | CAN |
| Protocol | CANopen, CANbus |
| Communication profile | CiA301, CiA406 V3.2 |
| Node ID | 1 - 127 (default node ID : 20) |
| Green LED | Power on,CAN communication active |
| Red LED | Error, stop mode |

| Modbus - Technical Specifications | |
|---|---|
| Interface | CiA301, CiA406 V3.2 |
| Protocol | Modbus |
| Node ID | 1 - 247 |
| Baud rate | 9600 - 115200 bit/second |

| PROFIBUS - Technical Specifications | |
|---|---|
| Interface | ProfiBUS-DP |
| Protocol | ProfiBUS-DP V0/V1/V2 |
| Linedriver | Galvanic isolation |
| Node ID | 1 - 127 (default node ID : 20) |
| Green LED | Power on,PROFIBUS communication active |
| Red LED | Error, stop mode |

| CANopen - Technical Specifications | |
|---|---|
| Interface | CAN |
| Protocol | CANopen, CANbus |
| Haberleşme profili | CiA301, CiA406 V3.2 |
| Node ID | 1 - 127 (default node ID : 20) |
| Green LED | Power on,CAN communication active |
| Red LED | Error, stop mode |

| SSI - Technical Specifications | |
|---|---|
| Interface | RS422 / RS485 |
| Protocol | SSI binary, SSI gray |
| Status LED | Optional |
| Green LED | Power on,SSI communication active |
| Red LED | Error, stop mode |

| BISS - Technical Specifications | |
|---|---|
| Interface | RS422 / RS485 |
| Protocol | BISS binary |
| Status LED | Opsiyonel |
| Green LED | Power on,BISS communication active |
| Red LED | Error, stop mode |

# RHTF

## In-Hydraulic Cylinders
## Linear Potentiometer

**RESISTIVE POTENTIOMETRIC**

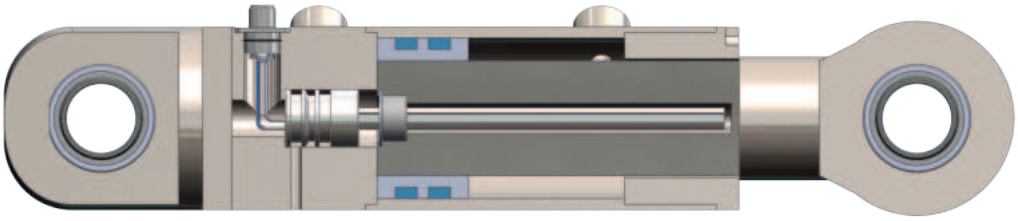
| Technical Specifications | |
|---|---|
| Measurement stroke | 100 - 1000 mm |
| Resolution | Infinite |
| Linearity | ±%0,05 |
| Repeatability | <0.2 mm |
| Resistance | 2 kOhm : 100 - 600 mm<br>5 kOhm : 650 - 1000 mm |
| Resistance tolerance | ± %20 |
| Load resistance | 100 kOhm min. |
| Recommended wiper current | <1 µA |
| Power supply | 28 VDC max. |
| Displacement speed | < 5 m/s |
| Mechanical life | >20 million movements |
| Case diameter | Ø15 mm |
| Case material | Anodized aluminium |
| Flange material | Stainless steel (AISI303) |
| Operating temperature | -10°C ... +70°C |
| Storage temperature | -30°C ... +90°C |

# RHTP

## In-Hydraulic Cylinders

## Linear Potentiometer

**RESISTIVE POTENTIOMETRIC**



| Technical Specifications | |
|---|---|
| Measurement stroke | 100 - 1000 mm |
| Resolution | Infinite |
| Linearity | ±%0,05 |
| Repeatability | <0.2 mm |
| Resistance | 2 kOhm : 100 - 600 mm<br>5 kOhm : 650 - 1000 mm |
| Resistance tolerance | ± %20 |
| Load resistance | 100 kOhm min. |
| Recommended wiper current | <1 µA |
| Power supply | 28 VDC max. |
| Displacement speed | < 5 m/s |
| Mechanical life | >20 million movements |
| Case diameter | Ø15 mm |
| Case material | Anodized aluminium |
| Flange material | Stainless steel (AISI303) |
| Operating temperature | -10°C ... +70°C |
| Storage temperature | -30°C ... +90°C |

# PRODUCTION RANGE

RESISTIVE POTENTIOMETRIC

Linear Potentiometers
Long Stroke Serie

RESISTIVE POTENTIOMETRIC

Linear Potentiometers
Short Stroke - Compact Serie

ANALOG V/mA

Linear Potentiometers
Internal Voltage - Current Conditioner Serie

Sensopulse® MAGNETOSTRICTIVE

ANALOG V/mA

Non-Contact Magnetostrictive
Position Sensors

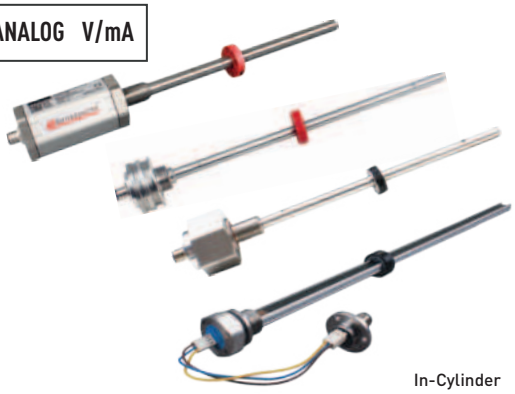
Sensopulse® MAGNETOSTRICTIVE | Modbus | SSI | CANopen | PROFIBUS | BiSS INTERFACE | CANbus | EtherCAT

Non-Contact Magnetostrictive
Position Sensors

Sensopulse® MAGNETOSTRICTIVE

RESISTIVE POTENTIOMETRIC

ANALOG V/mA



In-Cylinder
Position Sensors

# PRODUCTION RANGE

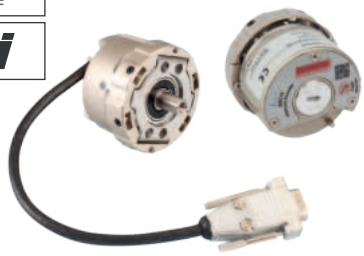
INCREMENTAL

Optic / Magnetic
Rotary Encoders

Sine Cosine

BiSS INTERFACE

SSI



Optic Rotary Absolute Encoders
(for synhronous gearless motors)

RESISTIVE POTENTIOMETRIC

INCREMENTAL

ANALOG V/mA

Draw Wire Potentiometers
Draw Wire Encoders

RESISTIVE POTENTIOMETRIC

ANALOG V/mA

Rotary Sensors Magnetic,
Contactless Analog Output

INCREMENTAL

Magnetic Linear Encoders

PROFIBUS

CANopen

Modbus

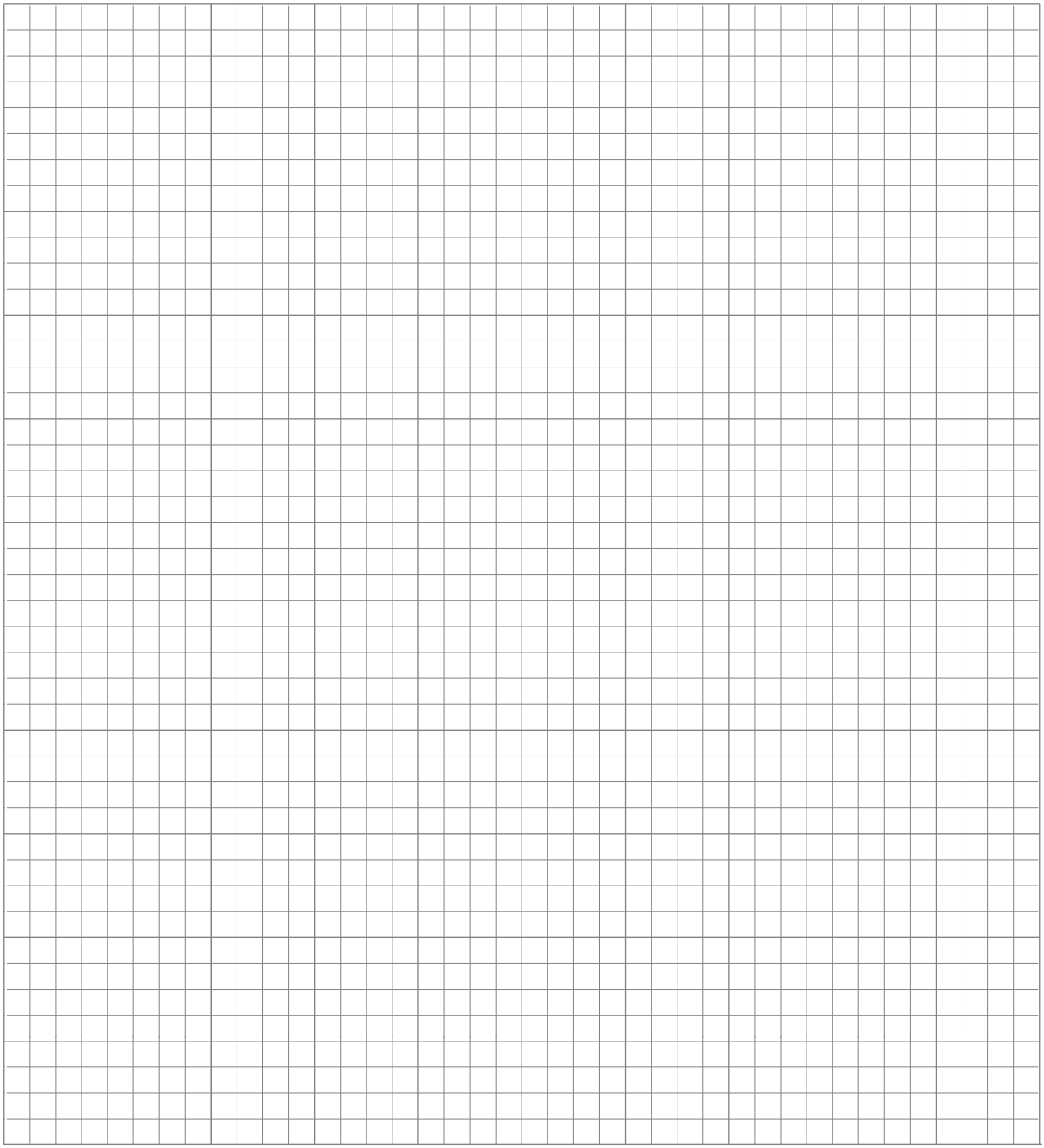
EtherCAT

Analog-FieldBUS Converters

Panel-Type Measurement and Control Devices


Hot Runner Temperature Controls

NOTE:



OPKON®
Sense the motion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