

**NON-CONTACT
MAGNETOSTRICTIVE POSITION SENSORS**

MSS

Non-Contact Magnetostrictive Position Sensor

ANALOG V / mA

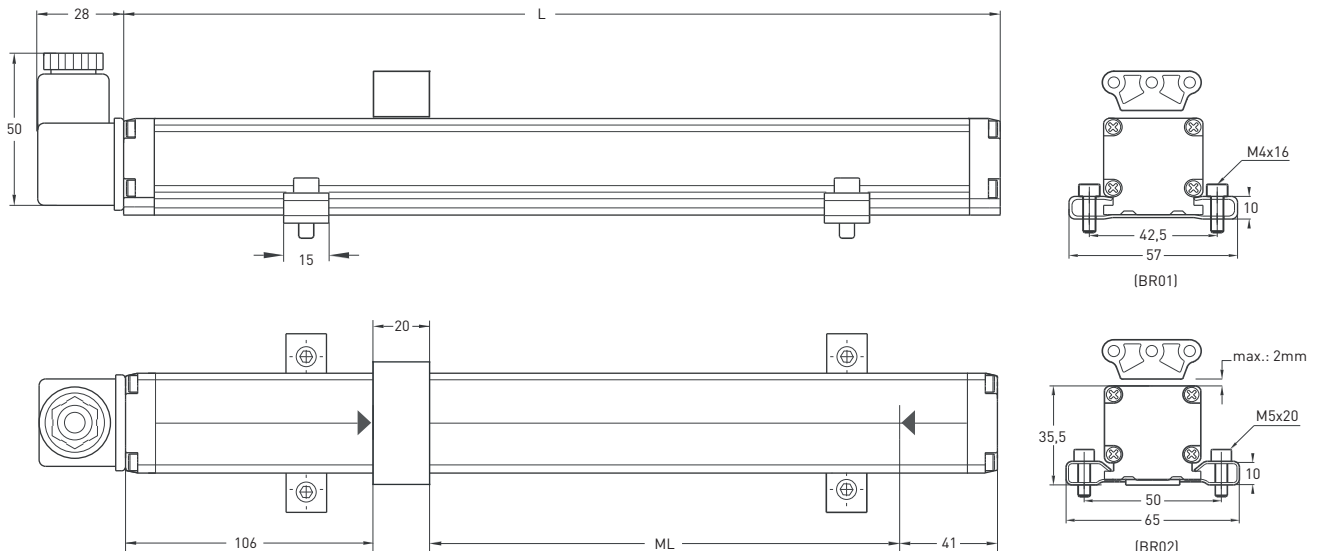
Sensopulse
MAGNETOSTRICTIVE



Technical Specifications

Measurement stroke	50 - 5000 mm
Resolution	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 (Speed information can be provided optionally.)
Power supply	24 VDC ±10%
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 200 m/s ² (20g) , 2h 30 min. each axis (x,y,z)
Shock	EN 60068-2-2:2007 500 m/s ² (50g) , 11ms. (x,y,z axis)
Case dimensions	33 mm x 33 mm
Case material	Anodized aluminium
Mechanical fixing	Variable brackets
Protection level	IP 65
Operating temperature	-10°C ... +70°C
Storage temperature	-30°C ... +90°C

Mechanical Specifications

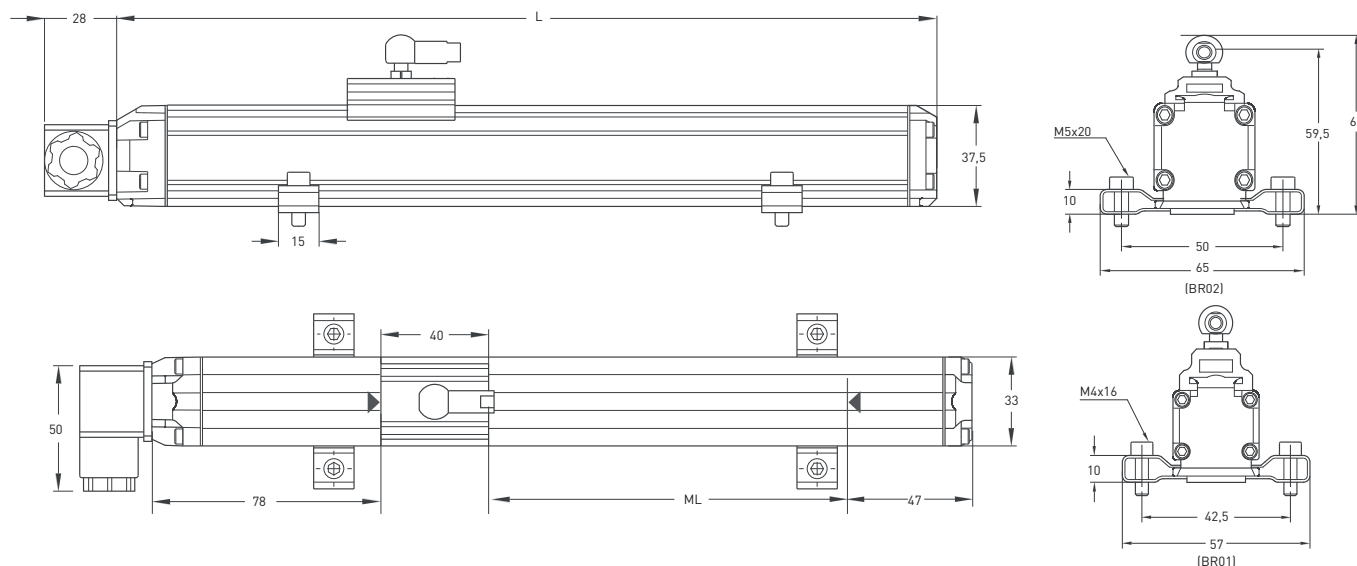


Non-Contact Magnetostrictive Position Sensor

ANALOG V / mA

Sensopulse[®]
MAGNETOSTRICTIVE**Technical Specifications**

Measurement stroke	50 - 5000 mm
Resolution	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 (Speed information can be provided optionally.)
Power supply	24 VDC ±10%
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 200 m/s ² (20g) , 2h 30 min. each axis (x,y,z)
Shock	EN 60068-2-2:2007 500 m/s ² (50g) , 11ms. (x,y,z axis)
Case dimensions	33 mm x 33 mm
Case material	Anodized aluminium
Mechanical fixing	Variable brackets
Protection level	IP 65
Operating temperature	-10°C ... +70°C
Storage temperature	-30°C ... +90°C

Mechanical Specifications

MSR

Non-Contact Magnetostrictive Position Sensor

ANALOG V / mA

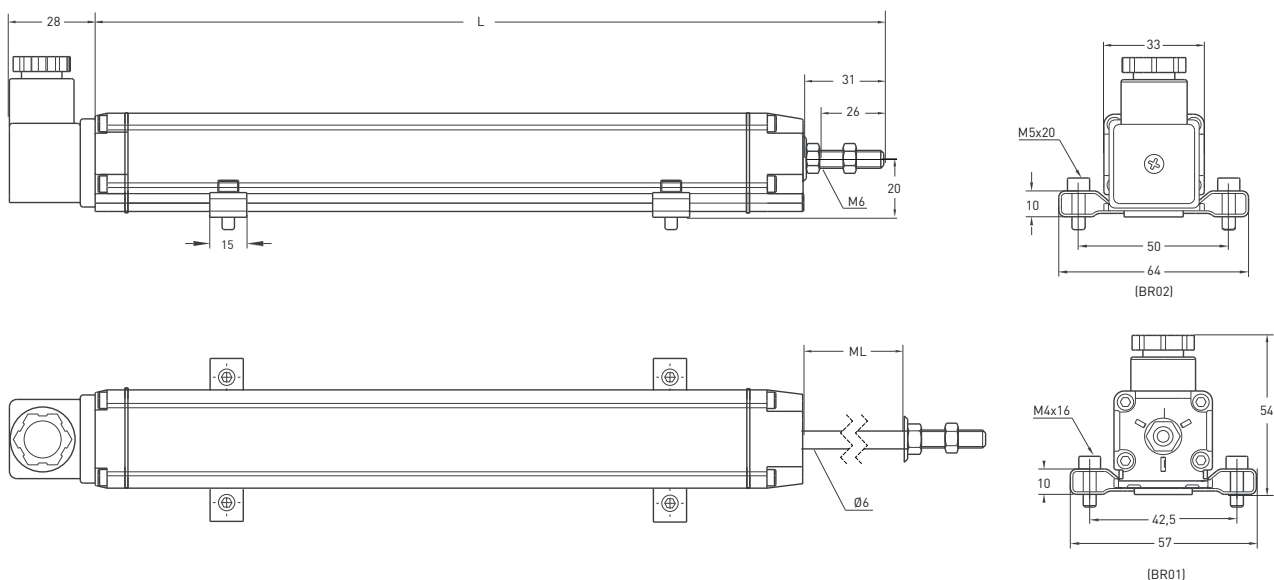
Sensopulse
MAGNETOSTRICTIVE



Technical Specifications

Measurement stroke	50 - 1000 mm
Resolution	16 bit DAC output
Linearity	50-100 mm < %1, 100-300 mm < %0.2, 300-500 mm < %0.1, 500-1000 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
Power supply	24 VDC ±10%
Displacement speed	< 5 m/s
Update time	(0-600mm, 0,5ms), (600-1000mm, 1ms)
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 200 m/s ² (20g) , 2h 30 min. each axis (x,y,z)
Shock	EN 60068-2-2:2007 500 m/s ² (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

Mechanical Specifications



Non-Contact Magnetostrictive Position Sensor

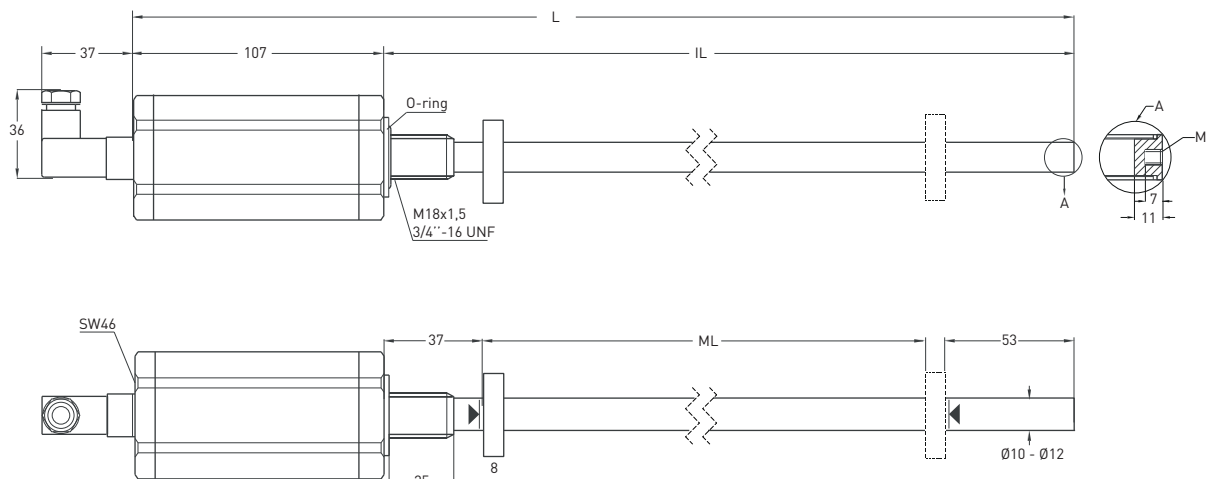
ANALOG V / mA

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 (Speed information can be provided optionally.)
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 200 m/s ² (20g) , 2h 30 min. each axis (x,y,z)
Shock	EN 60068-2-2:2007 500 m/s ² (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	M18 x 1.5 or 3/4" - 16 UNF O-ring or Flat
Protection level	IP 65
Operating temperature	-10°C ... +70°C
Storage temperature	-30°C ... +90°C

Mechanical Specifications



MSTL

Non-Contact Magnetostrictive Position Sensor

ANALOG V / mA

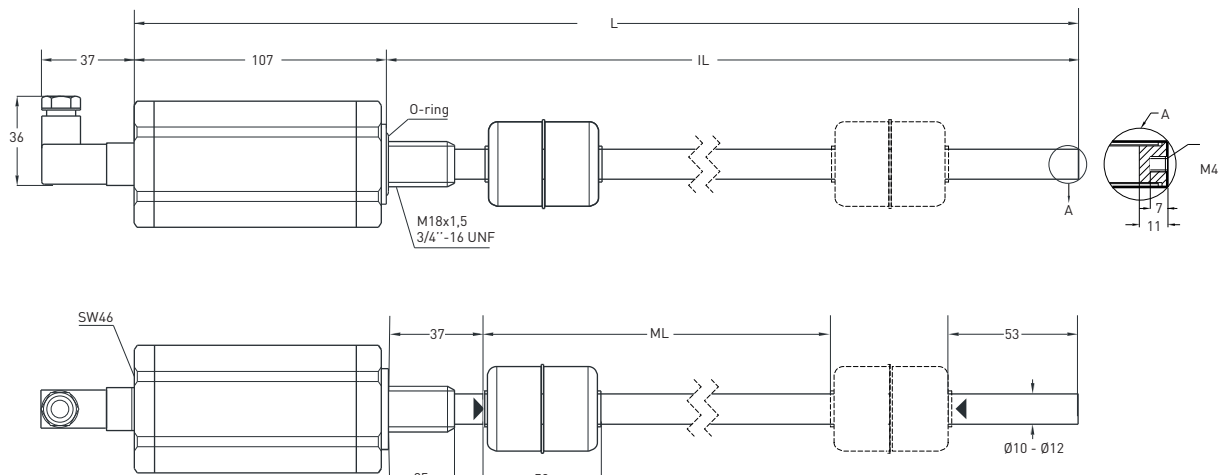
Sensopulse
MAGNETOSTRICTIVE



Technical Specifications

Measurement stroke	50 - 5000 mm
Resolution	16 bit DAC output
Repeatability	100 µm
Output	0-10V, 10-0V, 0-20 mA, 20-0 mA, 4-20 mA, 20-4 mA (Speed information can be provided optionally.)
Power supply	24 VDC ±10%
Displacement speed	max. < 5 m/s
Sampling rate	Up to 2 kHz (depending on stroke length)
Max. consumption	50 mA - 90 mA (depending on stroke length)
Max. output noise	< 5mVpp
Linearity	50-100 mm < %1, 100-300 mm < %0.2, 300-500 mm < %0.1, 500-5000 mm > %0.05
Vibration	EN 60068-2-6, 5-200 Hz
Shock	200 m/s ² (20g), 2h 30min each axis (x,y,z) EN 60068-2-2:2007 500 m/s ² (50g), 11ms. (x,y,z axis)
Update time	(0-600mm, 0,5ms), (600-1500mm, 1ms), (1500-3000mm, 2ms), (1501-5000mm, 3ms)
Reverse polarity protection	Up to -30 VDC
Overvoltage protection	Up to +30 VDC
Pressure rating	< 500 bar
Mounting	M18 x 1.5 or 3/4"-16 UNF
Case material	Profile : Anodized aluminium, Tube : Stainless steel, Caps : Stainless steel
Protection level	IP 65
Operating temperature	-10°C ... +70°C
Storage temperature	-30°C ... +90°C

Mechanical Specifications



In-Hydraulic Cylinders Magnetostrictive Position Sensor

ANALOG V / mA

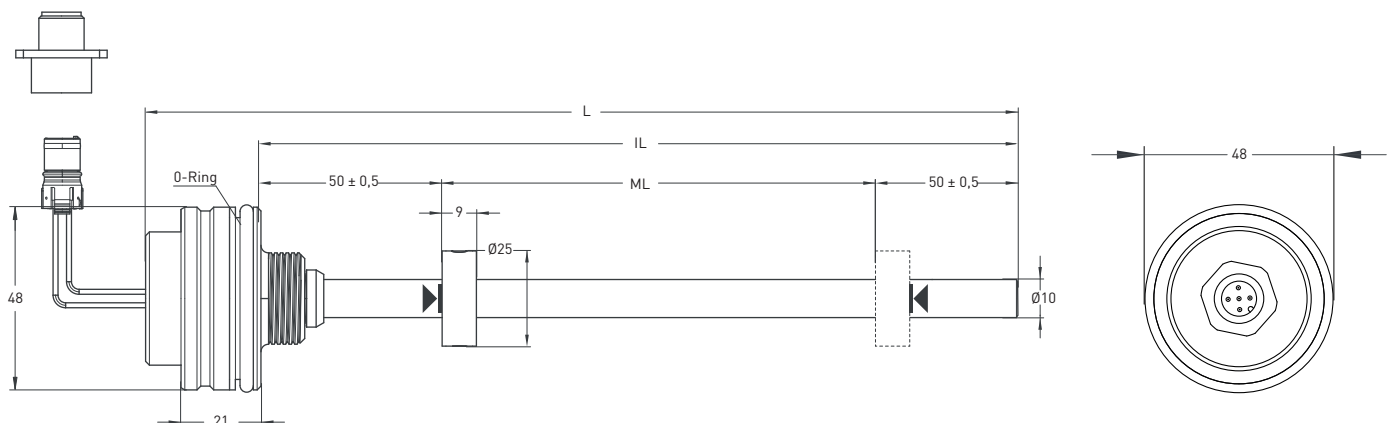
Sensopulse
MAGNETOSTRICTIVE



Technical Specifications

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 (depending on stroke length)
Vibration	EN 60068-2-6, 5-200 Hz 200 m/s ² (20g), 2h 30 min. each axis (x,y,z)
Shock	EN 60068-2-2:2007 500 m/s ² (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
Mechanical fixing	M15 x 1.5 or 3/4" - 16 UNF Backup or 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

Mechanical Specifications



MSPB

Non-Contact Magnetostrictive Position Sensor In Cylinder Applications

ANALOG V / mA

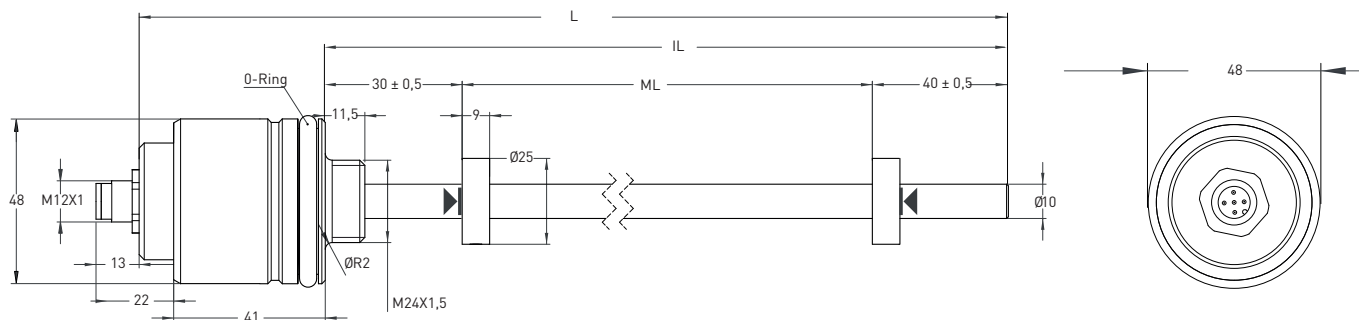
Sensopulse
MAGNETOSTRICTIVE



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. <math>< 5 \text{ m/s}</math>
Linearity	50-100 mm <math>< 1\%</math>, 100-300 mm <math>< 0.2\%</math>, 300-500 mm <math>< 0.1\%</math>, 500-1500 mm $> 0.05\%$
Sampling rate	Up to 2 kHz (depending on stroke length)
Vibration	EN 60068-2-6 , 5-200 Hz 200 m/s ² (20g) , 2h 30min each axis (x,y,z)
Shock	EN 60068-2-2:2007 500 m/s ² (50g) , 11ms. (x,y,z axis)
Update time	(0-600 mm, 0,5 ms), (600-1500 mm, 1 ms)
Max. consumption	<math>< 50 \text{ mA}</math> - 90 mA (depending on stroke length)
Max. output noise	<math>< 5 \text{ mVpp}</math>
Load resistance	max. 500 Ohm
Reverse polarity protection	Up to -30 VDC
Overvoltage protection	Up to 30 VDC
Pressure rating	<math>< 500 \text{ bar}</math>
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

Mechanical Specifications



Internal/External Mounting Hydraulic Cylinders
Magnetostrictive Position Sensor

ANALOG V / mA

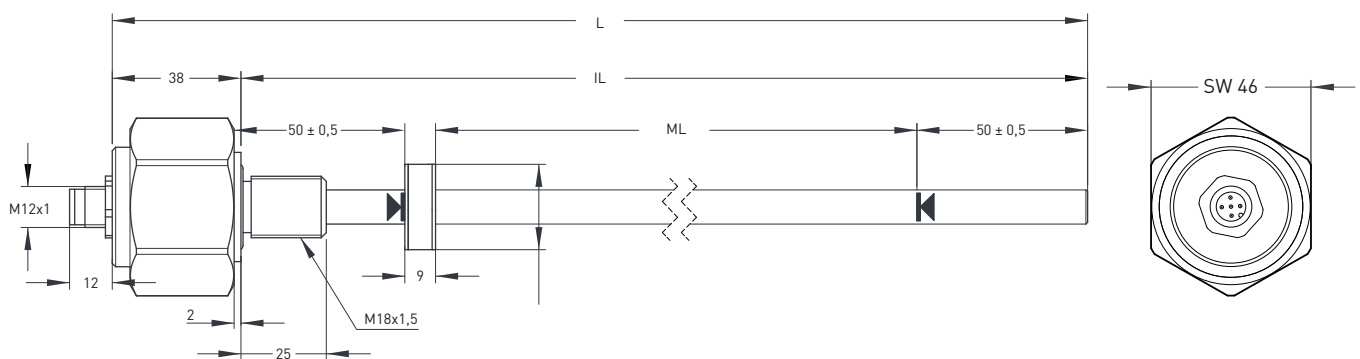
 **MAGNETOSTRICTIVE**



Technical Specifications

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 (depending on stroke length)
Vibration	EN 60068-2-6, 5-200 Hz 200 m/s ² (20g), 2h 30 min. each axis (x,y,z)
Shock	EN 60068-2-2:2007 500 m/s ² (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)
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
Mechanical fixing	M18 x 1.5 or 3/4"-16 UNF 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

Mechanical Specifications



DMSS

Digital Non-Contact Magnetostrictive Position Sensor



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

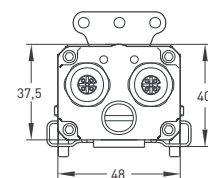
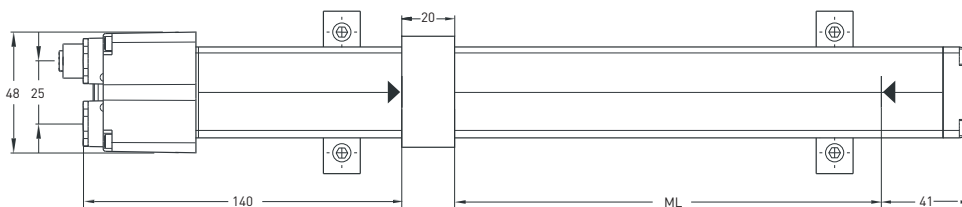
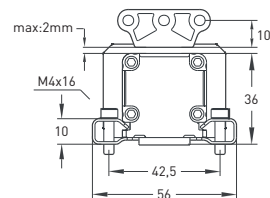
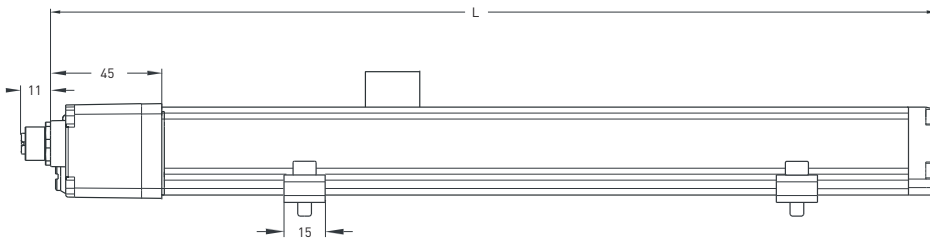
SSI - Technical Specifications

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

Mechanical Specifications



Digital Non-Contact Magnetostrictive Position Sensor



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

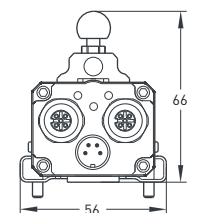
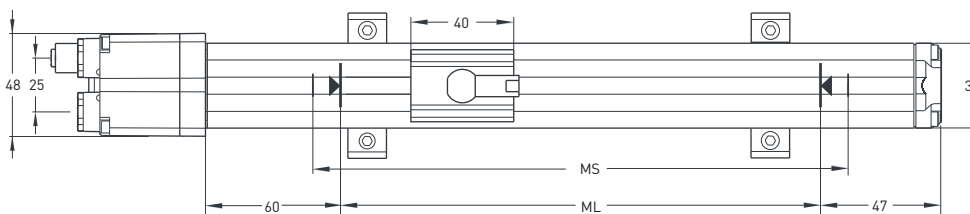
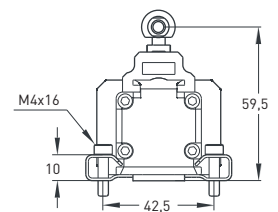
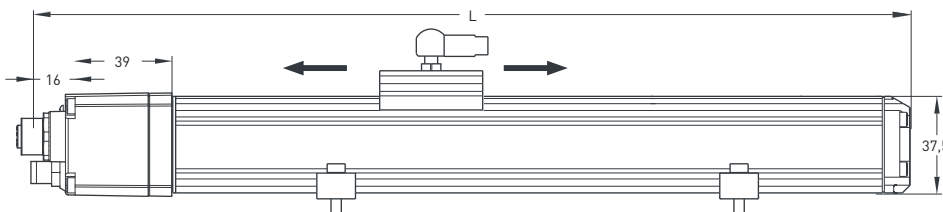
SSI - Technical Specifications

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

Mechanical Specifications



DMSR

Digital Non-Contact Magnetostrictive Position Sensor



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

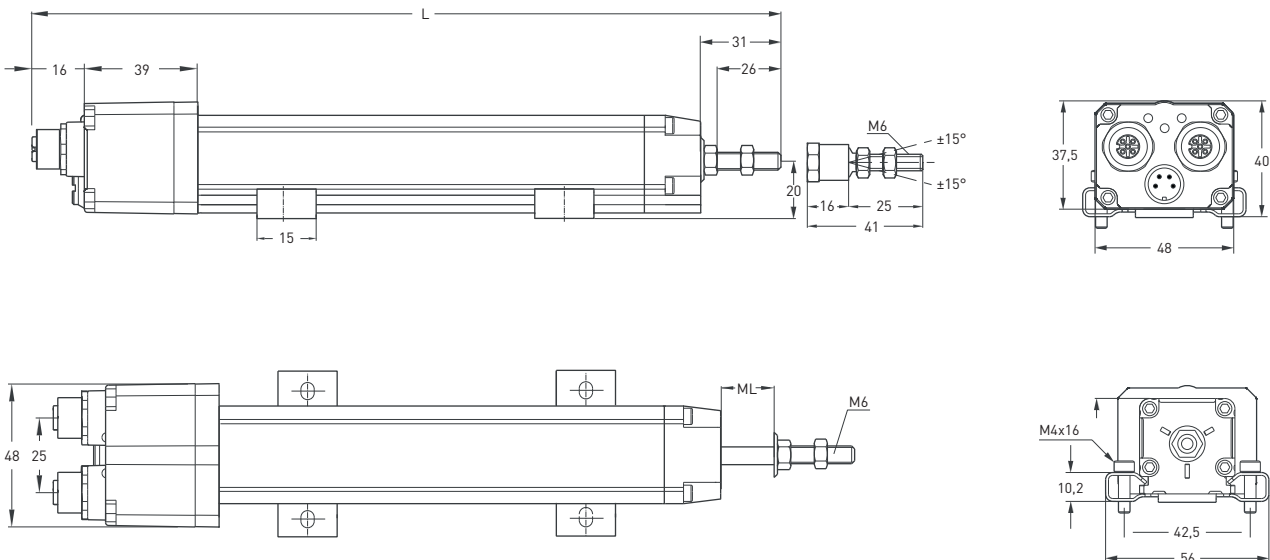
SSI - Technical Specifications

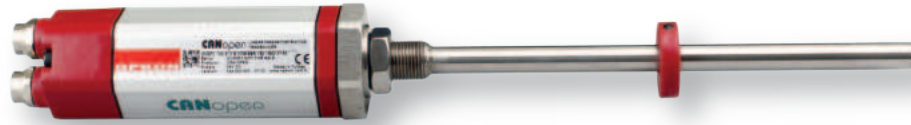
Interface	RS422 / RS485
Protocol	SSI binary, SSI gray
Status LED	Optional
Green LED	Power on, SSI communication active
Red LED	Error, stop mode

BISS - Technical Specifications

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

Mechanical Specifications





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

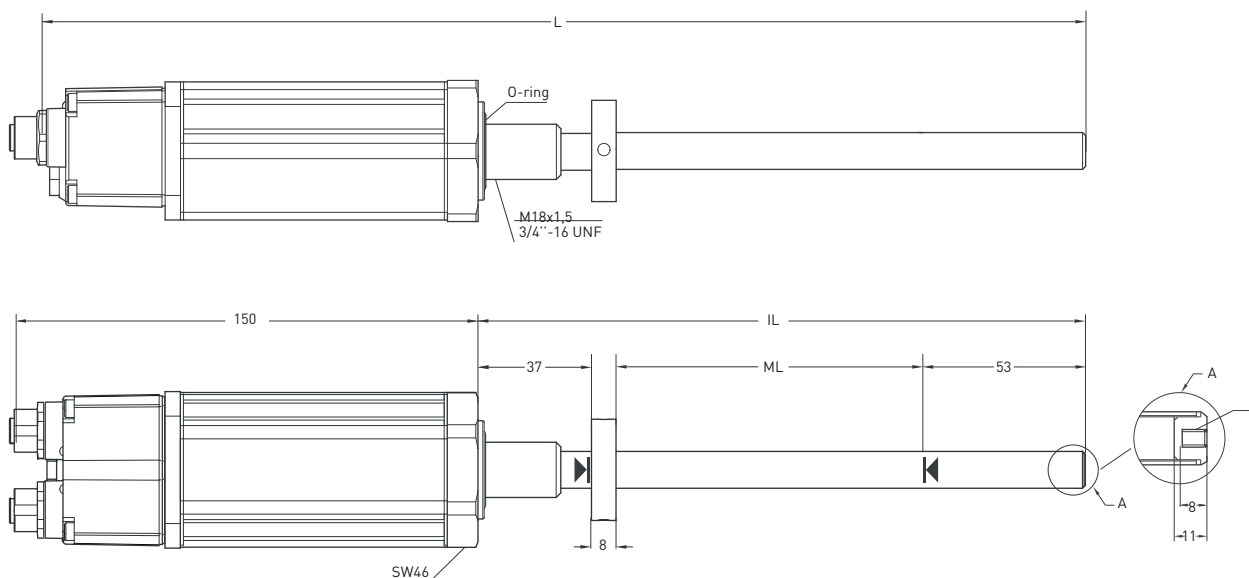
SSI - Technical Specifications

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

Mechanical Specifications



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

PROFINET

**BISS
INTERFACE**

CANbus

EtherCAT

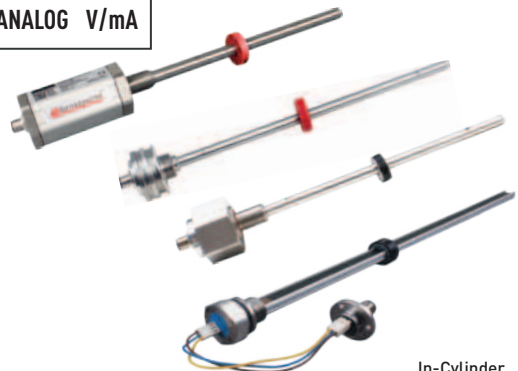


Non-Contact Magnetostrictive
Position Sensors

**Sensopulse®
MAGNETOSTRICTIVE**

**RESISTIVE
POTENTIOMETRIC**

ANALOG V/mA



In-Cylinder
Position Sensors

PRODUCTION RANGE

INCREMENTAL 

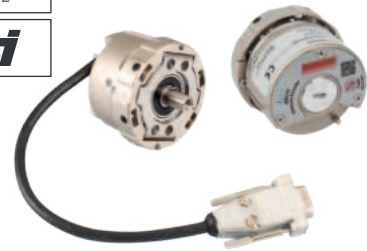


Optic / Magnetic
Rotary Encoders

 Sine
Cosine

 BISS
INTERFACE

 SSI



Optic Rotary Absolute Encoders
(for synchronous gearless motors)

RESISTIVE
POTENTIOMETRIC

INCREMENTAL 

ANALOG V/mA



Draw Wire Potentiometers
Draw Wire Encoders

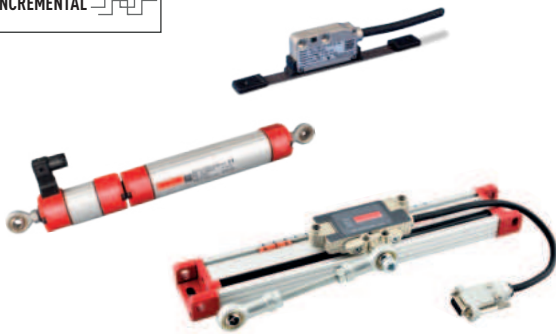
RESISTIVE
POTENTIOMETRIC

ANALOG V/mA



Rotary Sensors Magnetic,
Contactless Analog Output

INCREMENTAL 



Magnetic Linear Encoders

 PROFI
BUS

 CANopen

 Modbus

 EtherCAT



Analog-FieldBUS Converters



Panel-Type Measurement and Control Devices



Hot Runner Temperature Controls



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