

DUAL-AXIS INCLINATION SENSOR



COMPACT TILT DETECTION

The MSS is a compact, 2-axis slope sensor with CAN interface and infrared zeroing for easy and precise tilt detection in mobile systems.

- » Measures slope on two axes up to $\pm 60^\circ$
- » CAN interface with IN/OUT daisy-chaining for flexible integration
- » Infrared-based zero adjustment – no need to open housing
- » Ultra-flat and rugged design for tight installation spaces

Technical data

Voltage range	8...32 V DC
Current consumption	0.03 A @ 24 V
Axis	2
Zero point accuracy (25°C)	$\pm 0.1^\circ$
Zero point accuracy (-40...+85°C) typical drift	$\pm 0.0075^\circ/\text{K}$
Zero point accuracy (-40...+85°C) max. drift	$\pm 0.02^\circ/\text{K}$
Linearity (25° C)	$\pm 0.05^\circ$
Resolution	0.02°
Cut-off frequency	0.9 Hz
Ingress protection rating	IP 67
Insulation voltage	3 kV DC
Operating temperature range	- 40°...+ 85°C
Storage temperature range	- 40°...+ 85°C
Size (LxWxH)	70 x 80 x 35 mm
Weight	0.2 kg



Name	Article number	X-/Y-axis measuring range	Plugs	Interfaces
MSS-322	04-21-20430	-60°... +60°	5 pin binder M12, male (CAN IN), 5 pin binder M12, female (CAN OUT)	Simple bus lead via CAN IN/OUT wiring principle, CANopen communication in compliance with spec. CIA DS 301

SINGLE-AXIS INCLINATION SENSOR



COMPACT TILT DETECTION

Compact slope sensor based on accelerometer technology for precise inclination measurement. Delivers reliable results for standard machine control applications.

Technical data	
Voltage range	8...32 V DC
Axis	1
Zero point accuracy (25°C)	± 0.1°
Zero point accuracy (-40...+85°C) typical drift	± 0.0075°/K
Zero point accuracy (-40...+85°C) max. drift	± 0.02°/K
Cut-off frequency	0.9 Hz
Ingress protection rating	IP 67
Insulation voltage	3 kV DC
Operating temperature range	- 40°...+ 85°C
Storage temperature range	- 40°...+ 85°C
Size (LxWxH)	70 x 80 x 35 mm
Weight	0.2 kg
Plugs	5 pin binder M12, male (CAN), 5 pin binder M12, female



Name	Article number	Current consumption	Measuring range	Resolution	Linearity (25° C)	Interfaces
MSS-505	04-30-00250	0.07 A @ 13.8 V	-15°...+15°	0.05°	± 0.01°	Safety switch (S1/S2) closed ≥ 8.5°, indicator switch (K1/K2) K1 closed ≥ +3.0° K2 closed ≤ -3.0°
MSS-515	04-21-20420	0.05 A @ 24 V	-15°...+15°	0.02°	± 0.05°	Safety switch (S1/S2) closed ≤ 8.5°, CANopen communication in compliance with spec. CIA DS 301
MSS-517	04-21-20422	0.05 A @ 24 V	-45°...+45°	0.02°	± 0.05°	Simple bus lead via CAN IN/OUT wiring principle, CANopen communication in compliance with spec. CIA DS 301

MSS INCLINATION SENSOR



COMPACT TILT DETECTION

Compact slope sensor based on accelerometer technology for precise inclination measurement. Delivers reliable results for standard machine control applications.

Technical data

Voltage range	8...32 V DC
Current consumption	0.05 A @ 24 V
Zero point accuracy (25°C)	± 0.1°
Resolution	0.02°
Cut-off frequency	0.9 Hz
Ingress protection rating	IP 67
Insulation voltage	3 kV DC
Operating temperature range	- 40°...+ 85°C
Storage temperature range	- 40°...+ 85°C
Size (LxWxH)	70 x 80 x 35 mm
Weight	0.2 kg



Name	Article number	Measuring range	Plug (5pin binder M12)	Axis	Offset Drift, typ.	Offset Drift, max.	Linearity (25° C)	Temperature compensated
1 Channel								
MSS-620	04-21-20444	-30°...+30°	male (CAN IN), female (CAN OUT)	2	± 0.002°/K	± 0.004°/K	± 0.05°	Yes
2 Channels (CAN IN/OUT)								
MSS-520	04-21-20440	-30°...+30°	male (CAN IN), female (CAN OUT)	2	± 0.0075°/K	± 0.02°/K	± 0.05°	No
MSS-720	04-21-20442	-30°...+30°	male (CAN IN), female (CAN OUT)	2	± 0.002°/K	± 0.004°/K	± 0.05°	Yes
MSS-530	04-21-20450	-180°...+180°	male (CAN IN), female (CAN OUT)	1	± 0.1°/K	± 0.03°/K	± 0.2°	No
MSS-730	04-21-20452	-180°...+180°	male (CAN IN), female (CAN OUT)	1	± 0.003°/K	± 0.006°/K	± 0.2°	Yes
2 Channel (Separate CAN Bus Wiring)								
MSS-521	04-21-20441	-30°...+30°	male (CAN IN), female (CAN OUT)	2	± 0.0075°/K	± 0.02°/K	± 0.05°	No
MSS-721	04-21-20443	-30°...+30°	male (CAN 1), male (CAN 2)	2	± 0.002°/K	± 0.004°/K	± 0.05°	Yes
MSS-531	04-21-20451	-180°...+180°	male (CAN 1), male (CAN 2)	1	± 0.1°/K	± 0.03°/K	± 0.2°	No
MSS-731	04-21-20453	-180°...+180°	male (CAN 1), male (CAN 2)	1	± 0.003°/K	± 0.006°/K	± 0.2°	Yes

MSS HYBRID INCLINATION SENSOR



COMPACT TILT DETECTION

Advanced hybrid slope sensor combining MEMS and convection-based measurement. Two independent measurement principles ensure maximum precision and vibration immunity, with results fused in the controller.

Technical data	
Voltage range	8...32 V DC
Resolution	0.1°
Cut-off frequency	0.9 Hz
Ingress protection rating	IP 67
Insulation voltage	3 kV DC
Operating temperature range	-40°...+85°C
Storage temperature range	-40°...+85°C
Size (LxWxH)	70 x 80 x 35 mm
Weight	0.2 kg



2-Axis								
Name	Article number	Measuring range	Plug (5pin binder M12)	Offset Drift, typ.	Offset Drift, max.	Sensitivity error, typ	Cross axis error, max	Current consumption
1 Channel								
MSSH-620	04-21-22000	-30°...+30°	male (CAN IN), female (CAN OUT)	± 0.002°/K	± 0.004°/K	± 0.5 % of reading	± 0.5 % of reading	0.03 A @ 24 V
2 Channels								
MSSH-720	04-21-22050	-30°...+30°	male (CAN IN), female (CAN OUT)	± 0.002°/K	± 0.004°/K	± 0.5 % of reading	± 0.5 % of reading	0.05 A @ 24 V
MSSH-721	04-21-22075	-30°...+30°	male (CAN 1), male (CAN 2)	± 0.002°/K	± 0.004°/K	± 0.5 % of reading	± 0.5 % of reading	0.05 A @ 24 V

1-Axis								
Name	Article number	Measuring range	Plug (5pin binder M12)	Offset Drift, typ.	Offset Drift, max.	Nonlinearity, typ	Nonlinearity, max	Current consumption
1 Channel								
MSSH-630	04-21-22025	-180°...+180°	male (CAN IN), female (CAN OUT)	± 0.003°/K	± 0.006°/K	± 0.2	± 0.5	0.03 A @ 24 V
2 Channels								
MSSH-730	04-21-22100	-180°...+180°	male (CAN IN), female (CAN OUT)	± 0.003°/K	± 0.006°/K	± 0.2	± 0.5	0.05 A @ 24 V
MSSH-731	04-21-22125	-180°...+180°	male (CAN 1), male (CAN 2)	± 0.003°/K	± 0.006°/K	± 0.2	± 0.5	0.05 A @ 24 V