



TMM55, TMS/TMM61, TMS/TMM88

NON-CONTACT INCLINATION MEASUREMENT WITH PRECISION.

Inclination sensors

SICK
Sensor Intelligence.

TIMBER HARVESTER



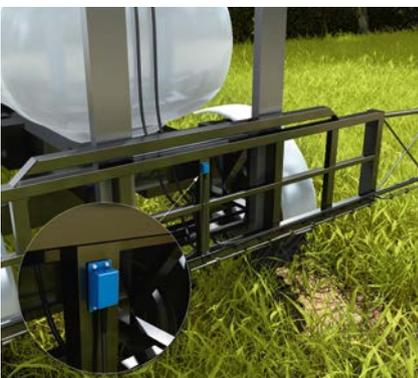
Measuring the incline of the driver's cab and chassis

The TMS/TMM88 inclination sensor is used for reliable leveling of the driver's cab. Thanks to its efficient filter algorithms to suppress vibrations and its rugged design, it is particularly well suited for use in harsh ambient conditions. Its high accuracy over the entire measuring range and its outstanding temperature stability offer further advantages in such conditions.

- TMS/TMM88 inclination sensor



CROP PROTECTION SPRAYER



Leveling the spray boom

The compact TMS/TMM61 inclination sensor is used to level the spray boom. Thanks to the sensor, the spray boom level can be adjusted for different terrains, for example. The TMS/TMM61 is suitable for this precise leveling task as it offers high accuracy across the entire measuring range, outstanding temperature stability and compensated cross sensitivity as well as configurable vibration suppression.

- TMS/TMM61 inclination sensor



EXCAVATOR



Leveling the excavator arm

To optimize the work routine of an excavator, the absolute position of the moving parts to each other must be known. Inclination sensors TMS/TMM reliably record this position by measuring the inclination of the upper and lower carriage and the excavator arm.

- TMS/TMM88 inclination sensor



MOBILE CRANE



Inclination sensors for positioning tasks on the mobile crane

To avoid damage due to overload and overturning, sensor solutions for load torque restrictions are used on the mobile crane. The 2 dimensionally functioning inclination sensor TMM suited for the support during the automated leveling of the mobile crane has a compensated cross sensitivity and configurable vibration suppression. The onedimensional functioning inclination sensor TMS records the position of the boom. Its measuring range of 360° and the freely adjustable zero point allow flexible application in various installation situations.

- TMS/TMM61 inclination sensor



SMALL, LIGHT, AND RUGGED.



Product description

The TMM55 inclination sensors are characterized by their compact design and ruggedness. As well as simple 4-hole mounting, the M12 male connector on the cable outlet also offers a great deal of flexibility when mounting the sensor mechanically. With their rugged and UV-resistant plastic housings,

the inclination sensors are also ideally suited to outdoor use. The information about the inclination angle is transmitted via analog current or voltage signals. To ensure high levels of accuracy, the inclination sensors are calibrated at the factory.

At a glance

- Compact, two-dimensional inclination sensor
- Fixed measuring ranges: $\pm 10^\circ$, $\pm 45^\circ$, $\pm 60^\circ$
- Analog current or voltage interface
- Resolution as low as 0.01°
- Small and easy-to-mount ABS plastic housing
- Protection class up to IP 67

Your benefits

- Precise inclination measurement in a defined measuring range
- Simple signal evaluation due to analog output signals
- Compact design for applications with limited space
- Can also be used in the harshest ambient conditions thanks to fully encapsulated electronics
- High performance at a cost-efficient price



Additional information

Fields of application	5
Detailed technical data	5
Ordering information	6
Dimensional drawings	6
PIN assignment	7
Accessories	7

→ www.sick.com/TMM55

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.



Fields of application

- Agricultural and forestry machinery
- Construction machinery and special-purpose vehicles
- Solar thermal energy and photovoltaics
- Automated guided systems
- Crane and lifting technology
- Wind power plant

Detailed technical data

Performance

Number of axis	2	
Measuring range	± 10° ± 45° ± 60°	
Resolution	± 10°	0.01°
	± 45°	0.05°
	± 60°	0.06°
Accuracy	± 10°	± 0.15°
	± 45°	± 0.3°
	± 60°	± 0.5°
Cross-sensitivity (compensated)	± 10°	Typ. ± 0.25°, max. ± 0.5°
	± 45°	Typ. ± 0.9°, max. ± 1.8°
	± 60°	Typ. ± 1.2°, max. ± 2.4°
Temperature coefficient (zero point)	Max. ±0,009°/K	
Limit frequency	18 Hz	
Sampling rate	1.95 kHz	
Initialization time	75 ms	

Interfaces

	4...20 mA, sinusoidal	0...10 V, sinusoidal
Load resistance max,	930 Ω	-

Electrical data

	4...20 mA, sinusoidal	0...10 V, sinusoidal
Connection type	Cable, 5-wire, 0.2 m, with male connector M12, 5-pin	
Operating voltage range	11 V DC ... 30 V DC	
Current consumption	15 ... 45 mA	15 ... 25 mA
Reverse polarity protection	✓	
Short-circuit protection of the outputs	✓	
MTTFd: mean time to dangerous failure	378 years (EN ISO 13849-1) ¹⁾	290 years (EN ISO 13849-1) ¹⁾

¹⁾ This product is a standard product and does not constitute a safety component as defined in the Machinery Directive. Calculation based on nominal load of components, average ambient temperature 40°C, frequency of use 8760 h/a. All electronic failures are considered hazardous. For more information, see document no. 8015532.

Mechanical data

Dimensions	65 mm x 35 mm x 20 mm
Mass	55 g (with cable)
Housing material	Plastic (ABS)
Material, cable	PUR

Ambient data

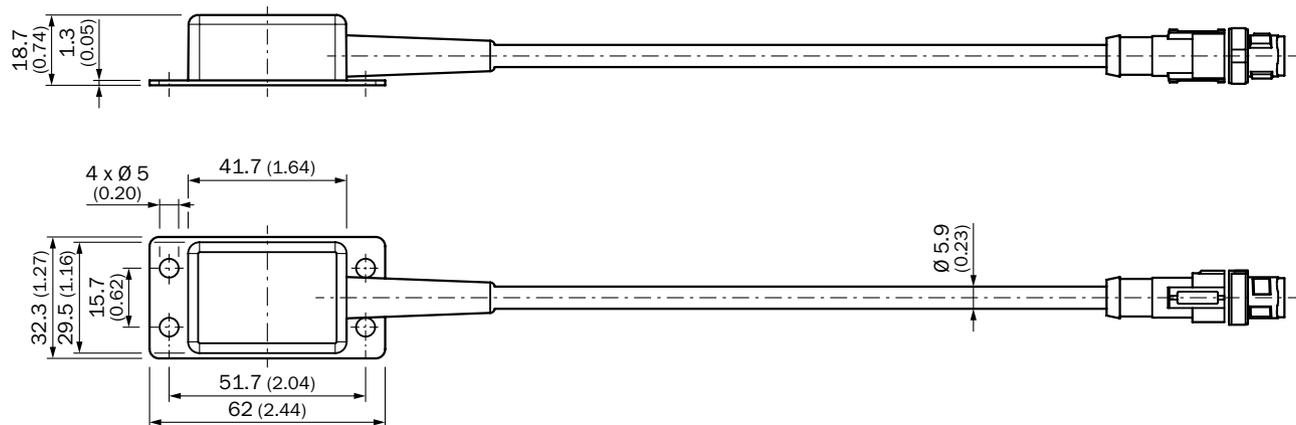
EMC	EN 61326-1, EN ISO 14982, EN ISO 13309
Enclosure rating	IP65/IP67 (according to IEC 60529)
Working temperature range	-40 °C ... +80 °C
Storage temperature range	-40 °C ... +85 °C
Resistance to shocks	100 g, 6 ms (according to EN 60068-2-27)
Resistance to vibration	10 g, 10 Hz ... 2,000 Hz (according to EN 60068-2-6)

Ordering information

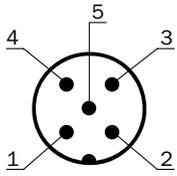
- **Number of axis:** 2-dimensional
- **Housing material:** Plastic (ABS)

Measuring range	Resolution	Electrical interface	Type	Part no.
± 10°	0.01°	0...10 V, sinusoidal	TMM55E-POH010	1073783
		4...20 mA, sinusoidal	TMM55E-PMH010	1073780
± 45°	0.05°	0...10 V, sinusoidal	TMM55E-POH045	1073784
		4...20 mA, sinusoidal	TMM55E-PMH045	1073781
± 60°	0.06°	0...10 V, sinusoidal	TMM55E-POH060	1073785
		4...20 mA, sinusoidal	TMM55E-PMH060	1073782

Dimensional drawings (Dimensions in mm (inch))



PIN assignment



PIN Male connector M12, 5-pin	Colour of wires Cable connection	Signal	Function
1	Brown	VDC	Supply voltage
2	White	Y-OUT	Sensorsignal y-axis
3	Blue	GND	0V (GND)
4	Black	X-OUT	Sensorsignal x-axis
5	Green/yellow	Signal- GND	Signal GND (internally connected to GND)

Accessories

Plug connectors and cables

Connecting cables with female connector

Figure	Brief description	Cable length	Type	Part no.
	Head A: female connector, M12, 5-pin, angled, A-coded Head B: cable Cable: Analog, Power, drag chain use, PUR, halogen-free, shielded	1.5 m	DOL-1205-W1M5AC-SCO	6049455
		3 m	DOL-1205-W03MAC-SCO	6049456
		5 m	DOL-1205-W05MAC-SCO	6049457
		10 m	DOL-1205-W10MAC-SCO	6049458
	Head A: female connector, M12, 5-pin, straight, A-coded Head B: cable Cable: Analog, drag chain use, PUR, halogen-free, shielded	1.5 m	DOL-1205-G1M5AC-SCO	6049451
		3 m	DOL-1205-G03MAC-SCO	6049452
		5 m	DOL-1205-G05MAC-SCO	6049453
		10 m	DOL-1205-G10MAC-SCO	6049454

Dimensional drawings → [Page 8](#)

Female connectors (ready to assemble)

Figure	Brief description	Type	Part no.
	Head A: female connector, M12, 5-pin, straight Cable: unshielded	DOS-1205-G	6009719

Dimensional drawings → [Page 8](#)

Male connectors (ready to assemble)

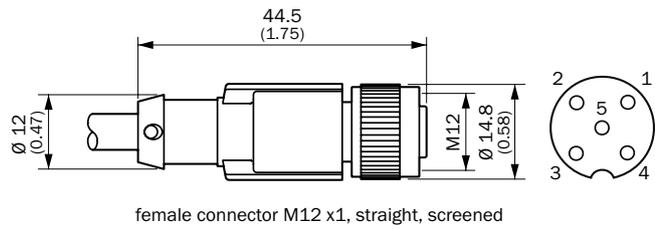
Figure	Brief description	Type	Part no.
	Head A: male connector, M12, 5-pin, straight Cable: unshielded	STE-1205-G	6022083

Dimensional drawings → [Page 8](#)

Dimensional drawings for accessories (Dimensions in mm (inch))

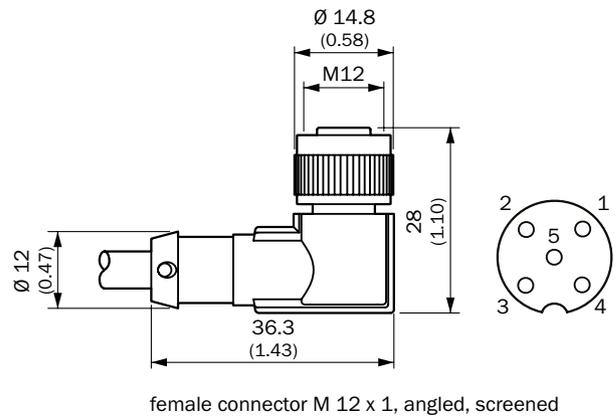
Connecting cables with female connector

DOL-1205-GxxMACSCO



- ① Brown
- ② White
- ③ Blue
- ④ Black
- ⑤ Gray

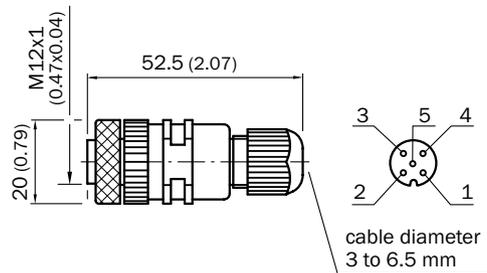
DOL-1205-WxxxACSCO



- ① Brown
- ② White
- ③ Blue
- ④ Black
- ⑤ Gray

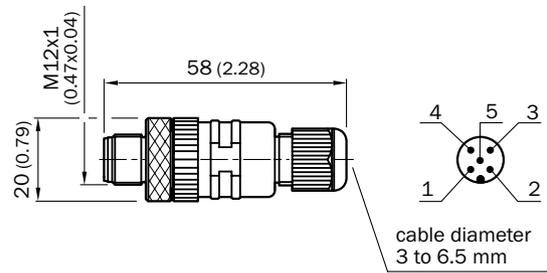
Female connectors (ready to assemble)

DOS-1205-G

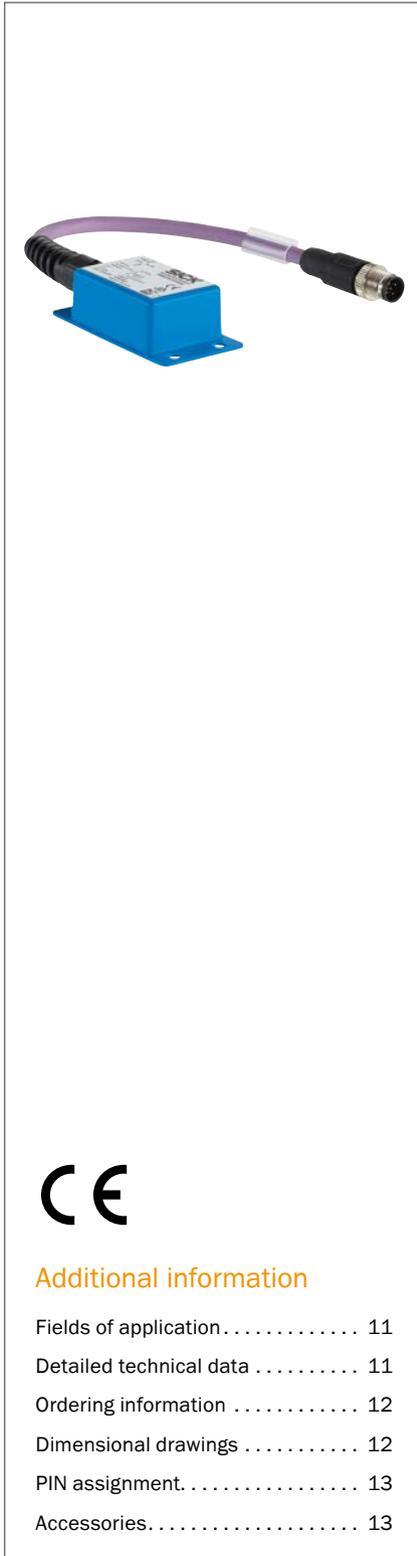


Male connectors (ready to assemble)

STE-1205-G



PRECISE INCLINATION MEASUREMENT IN A COMPACT DESIGN



Product description

The TMS61 one-dimensional inclination sensor and the TMM61 two-dimensional inclination sensor are setting new standards with respect to size, flexibility, and performance. In their small, rugged plastic housings, the sensors offer excellent resolution and accuracy – what’s more, this is achieved over the entire measuring range and in an extremely wide range of ambient conditions. The

CANopen interface enables a whole host of device parameters to be adapted, allowing the sensor to be perfectly tailored to the application. The new PGT-12-Pro handheld programming tool from SICK makes configuration much easier. As a result, the user is ready to go in just a few clicks and can cut out the time-consuming task of configuring the sensor via the control system.

At a glance

- Compact inclination sensor with measuring range of 360° (single-axis) or ±90° (dual-axis)
- Compensated cross sensitivity and configurable vibration suppression
- Convenient CANopen interface
- UV-resistant, impact-proof plastic housing
- High resolution (0.01°) and accuracy (±0.1° typ.)
- Programmable with the PGT-12-Pro

Your benefits

- Inclination measurement in two axes without mutual interference
- Single-axis inclination measurement over 360° with configurable zero point
- Flexible adaptation to the application via the CANopen interface or PGT-12-Pro handheld programming tool
- Reliable output signal thanks to configurable digital filter
- Precise leveling thanks to high accuracy over the entire measuring range
- Compact design for applications with limited space
- Can also be used in the harshest ambient conditions thanks to fully encapsulated electronics



Additional information

Fields of application	11
Detailed technical data	11
Ordering information	12
Dimensional drawings	12
PIN assignment	13
Accessories	13

→ www.sick.com/TMS_TMM61

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.



Fields of application

- Agricultural and forestry machinery
- Construction machinery and special-purpose vehicles
- Solar thermal energy and photovoltaics
- Automated guided systems
- Crane and lifting technology
- Wind power plant

Detailed technical data

Performance

	1-dimensional	2-dimensional
Measuring range	360°	± 90°
Resolution	0.01°	
Accuracy		
≤ 360°	Typ. ± 0.15°, max. ± 0.25°	–
≤ ± 60°	–	Typ. ± 0.1°, max. ± 0.2°
≤ ± 80°	–	Typ. ± 0.2°, max. ± 0.3°
Cross-sensitivity (compensated)	–	Typ. ± 0.09°, max. ± 0.45°
Temperature coefficient (zero point)	Typ. ± 0,01°/K ¹⁾	
Limit frequency	0.1 Hz ... 25 Hz, 8. range (with digital filter)	
Sampling rate	80 Hz	
Initialization time	75 ms	

¹⁾ Referring to the temperature of 25 °C.

Interfaces

Electrical interface	CANopen
Device profile	CiA DS-301, DS-410 v4.2.0 CiA (Device profile for inclination sensors) CiA DSP-305 (Layer Setting Service (LSS) and protocols)
Address setting	0...127, default: 10
Data transmission rate (baud rate)	10 kbit/s ... 1,000 kbit/s, default: baud rate detection
Status information	CANopen status via status LED
Bus termination	Via external termination resistance
Parameterising data	Zerose, Limit frequency, preset value, inverting of counting direction
Programmable/configurable	Over PGT-12-Pro

Electrical data

Connection type	Cable, 5-wire, 0.2 m, with male connector M12, 5-pin
Operating voltage range	8 V DC ... 36 V DC
Current consumption	< 16 mA @ 24 V
Reverse polarity protection	✓
Short-circuit protection of the outputs	✓
MTTFd: mean time to dangerous failure	663 years (EN ISO 13849-1) ¹⁾

¹⁾ This product is a standard product and does not constitute a safety component as defined in the Machinery Directive. Calculation based on nominal load of components, average ambient temperature 40 °C, frequency of use 8760 h/a. All electronic failures are considered hazardous. For more information, see document no. 8015532.

Mechanical data

Dimensions	68 mm x 36.3 mm x 20.7 mm
Mass	80 g (with cable)
Housing material	Plastic (ABS)
Material, cable	PUR

Ambient data

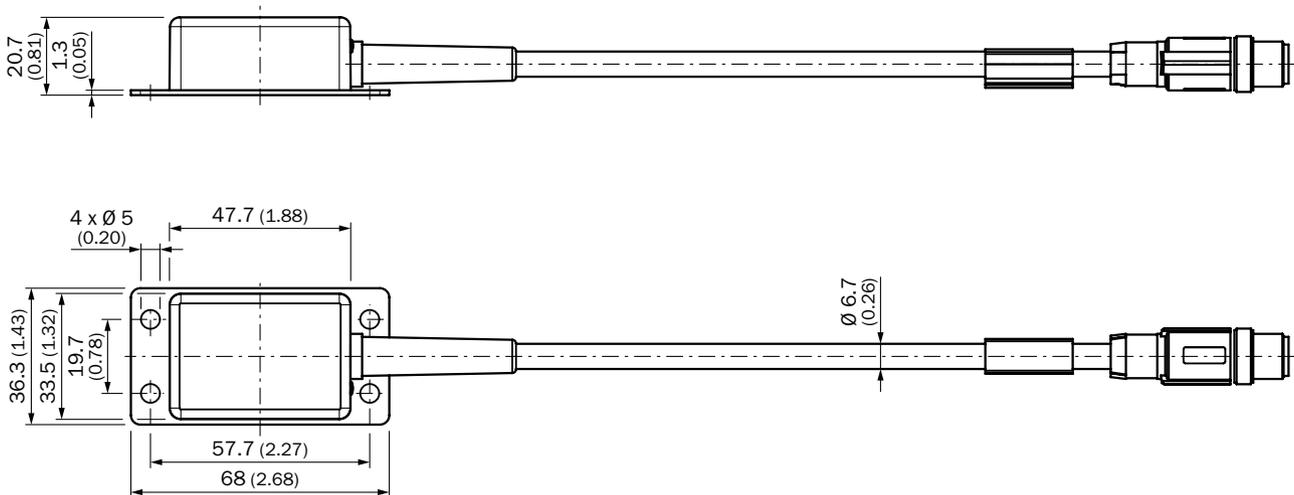
EMC	EN 61326-1, EN ISO 14982, EN ISO 13309
Enclosure rating	IP65/IP67 (according to IEC 60529)
Working temperature range	-40 °C ... +80 °C
Storage temperature range	-40 °C ... +85 °C
Resistance to shocks	100 g, 6 ms (according to EN 60068-2-27)
Resistance to vibration	10 g, 10 Hz ... 2,000 Hz (according to EN 60068-2-6)

Ordering information

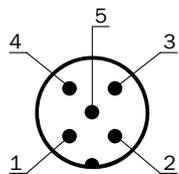
- **Housing material:** Plastic (ABS)
- **Resolution:** 0.01°
- **Electrical interface:** CANopen

Number of axis	Measuring range	Type	Part no.
1-dimensional	360°	TMS61B-PCH360	1073786
2-dimensional	± 90°	TMM61B-PCH090	1073787

Dimensional drawings (Dimensions in mm (inch))



PIN assignment



PIN	Signal	Function
Male connector M12, 5-pin		
1	CAN Shield	Shielding
2	VDC	Supply voltage
3	GND/CAN GND	0V (GND)
4	CAN high	CAN signal
5	CAN low	CAN signal

Accessories

Programming and configuration tools

Figure	Brief description	Type	Part no.
	Display Programming Tool for programmable SICK encoders AHS/AHM36 CANopen, inclination sensors TMS/TMM61 CANopen, TMS/TMM88 CANopen, TMS/TMM88 Analog and wire draw encoders with AHS/AHM36 CANopen. Compact dimensions, low weight and intuitive to use.	PGT-12-Pro	1076313

Plug connectors and cables

Connecting cables with female connector

Figure	Brief description	Cable length	Type	Part no.
 Illustration may differ	Head A: female connector, M12, 5-pin, straight Head B: cable Cable: CANopen, DeviceNet, drag chain use, shielded	2 m	DOL-1205-G02MY	6053041
		5 m	DOL-1205-G05MY	6053042
		10 m	DOL-1205-G10MY	6053043

Dimensional drawings → [Page 15](#)

Connection cables with female connector and female connector

Brief description	Cable length	Type	Part no.
Head A: female connector, M12, 5-pin, straight Head B: female connector, D-Sub, 9-pin, straight Cable: CANopen, shielded	0.5 m	DDL-2D05-G0M5BC9	2083805

Connection cables with female connector and male connector

Figure	Brief description	Cable length	Type	Part no.
 Illustration may differ	Head A: female connector, M12, 5-pin, straight Head B: male connector, M12, 5-pin, straight Cable: CANopen, DeviceNet, drag chain use, PUR, halogen-free, shielded	2 m	DSL-1205-G02MY	6053044
		5 m	DSL-1205-G05MY	6053045
		10 m	DSL-1205-G10MY	6053046

Dimensional drawings → [Page 15](#)

Female connectors (ready to assemble)

Figure	Brief description	Type	Part no.
	Head A: female connector, M12, 5-pin, straight Cable: CANopen, DeviceNet, shielded	DOS-1205-GA	6027534

Dimensional drawings → [Page 16](#)

Male connectors (ready to assemble)

Figure	Brief description	Type	Part no.
	Head A: male connector, M12, 5-pin, straight, A-coded Cable: CANopen, DeviceNet, shielded	STE-1205-GA	6027533

Dimensional drawings → [Page 16](#)

Other connectors and cables

Figure	Brief description	Type	Part no.
	Head A: male connector, M12, 5-pin, straight Cable: CANopen, unshielded	CAN male connector	6021167

Adapters and distributors

T-junctions

Figure	Brief description	Type	Part no.
	Head A: female connector, M12, 5-pin Head B: male connector, M12 Cable: CANopen	DSC-1205T000025KM0	6030664

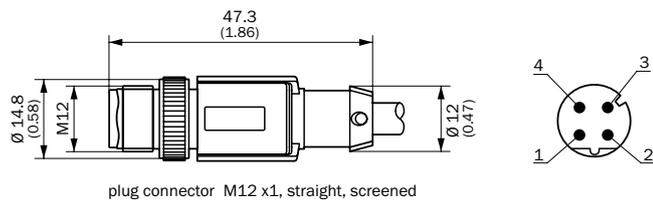
Y-junctions

Figure	Brief description	Cable length	Type	Part no.
	Head A: female connector, M12, 5-pin, straight, A-coded Head B: female connector, M12, 5-pin, straight, A-coded Male connector, M12, 5-pin, straight, A-coded Cable: CAN, Power	0.5 m	Y-CAN cable	6027647

Dimensional drawings for accessories (Dimensions in mm (inch))

Connecting cables with female connector

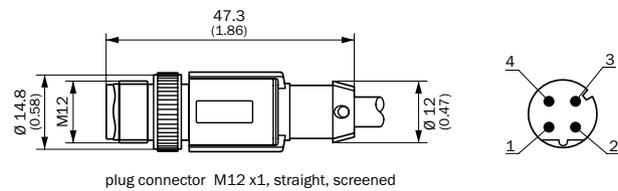
DOL-1205-GxxMY



- ① Shield wire
- ② Red
- ③ Black
- ④ White
- ⑤ Blue

Connection cables with female connector and male connector

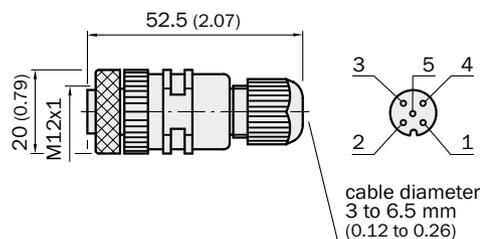
DSL-1205-GxxMY



- ① Shield wire
- ② Red
- ③ Black
- ④ White
- ⑤ Blue

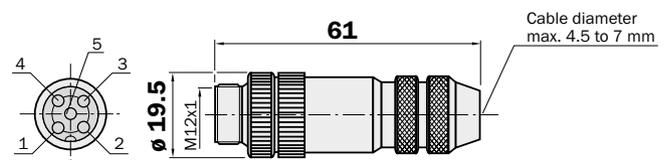
Female connectors (ready to assemble)

DOS-1205-GA



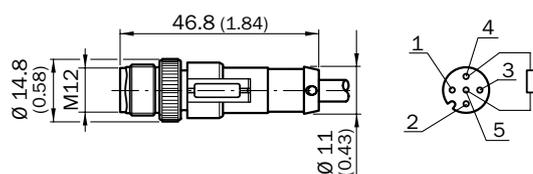
Male connectors (ready to assemble)

STE-1205-GA



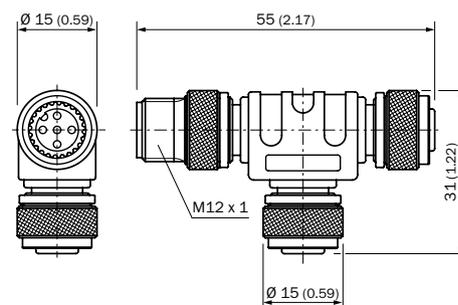
Other connectors and cables

CAN male connector



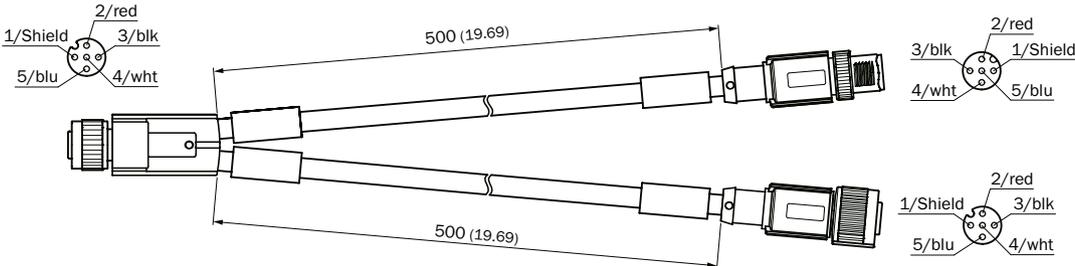
T-junctions

DSC-1205T000025KM0



Y-junctions

Y-CAN cable



HIGH-PRECISION INCLINATION MEASUREMENT FOR HARSH AMBIENT CONDITIONS.



Product description

The TMS88 one-dimensional inclination sensor and the TMM88 two-dimensional inclination sensor take measurements with an accuracy of up to $\pm 0.02^\circ$. The inclination value is provided either via a current or voltage interface with a linearized output signal or via a standardized CANopen interface. The PGT-12-Pro

handheld programming tool allows the inclination sensors to be configured with ease, tailoring them perfectly to the application.

The sensors are available in UV-resistant plastic housings and in rugged aluminum housings.

At a glance

- Inclination sensor with measuring range of 360° (single-axis) or $\pm 90^\circ$ (dual-axis)
- Compensated cross sensitivity and configurable vibration suppression
- Freely configurable current or voltage interface or convenient CANopen interface
- Accuracy up to $\pm 0.02^\circ$
- Plastic or aluminum housing
- Programmable with the PGT-12-Pro

Your benefits

- Inclination measurement in two axes without mutual interference
- Single-axis inclination measurement over 360° with configurable zero point
- Flexible adaptation to the application via the CANopen interface or PGT-12-Pro handheld programming tool
- Reliable output signal thanks to configurable digital filters
- Suitable for precise leveling tasks thanks to high accuracy over the entire measuring range and exceptional temperature stability
- Can also be used in the harshest ambient conditions thanks to fully encapsulated electronics



Additional information

Fields of application	19
Detailed technical data	19
Ordering information	22
Dimensional drawings	23
PIN assignment	24
Accessories	24

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Fields of application

- Agricultural and forestry machinery
- Construction machinery and special-purpose vehicles
- Solar thermal energy and photovoltaics
- Automated guided systems
- Crane and lifting technology
- Wind power plant

Detailed technical data

TMS/TMM88 Basic

Performance

	4...20 mA, linearised	0...10 V, linearised	CANopen
Number of axis	1 2		
Measuring range	1-dimensional 360° 2-dimensional ± 90°		
Resolution	0.01°		
Accuracy	1-dimensional Typ. ± 0.15°, max. ± 0.25° 2-dimensional, ≤ ± 60° Typ. ± 0.1°, max. ± 0.2° ≤ ± 80° Typ. ± 0.2°, max. ± 0.4°		
Cross-sensitivity (compensated)	2-dimensional Typ. ± 0.1°, max. ± 0.2°		
Temperature coefficient (zero point)	Typ. ± 0,01°/K ¹⁾		Typ. ± 0,008°/K ¹⁾
Limit frequency	0.1 Hz ... 25 Hz, 8. range (with digital filter)		
Sampling rate	80 Hz		
Initialization time	265 ms	270 ms	80 ms

¹⁾ Referring to the temperature of 25 °C.

Interfaces

	4...20 mA, linearised	0...10 V, linearised	CANopen
Load resistance max,	850 Ω ¹⁾	-	
Device profile	- CiA DS-301, DS-410 v4.2.0 CiA (Device profile for inclination sensors) CiA DSP-305 (Layer Setting Service (LSS) and protocols)		
Address setting	- 0...127, default: 10		
Data transmission rate (baud rate)	- 10 kbit/s ... 1,000 kbit/s, default: baud rate detection		
Status information	- CANopen status via status LED		
Bus termination	- Via external termination resistance		
Parameterising data	Measuring range, Zeroset, Limit frequency, preset value, inverting of counting direction, axis assignment, free adjustable outbound Zeroset, Limit frequency, preset value, inverting of counting direction		
Programmable/configurable	Over PGT-12-Pro		

¹⁾ On U_s = 24 V.

Electrical data

	4...20 mA, linearised	0...10 V, linearised	CANopen
Connection type	Male connector M12, 5-pin		
Operating voltage range	17 V DC ... 35 V DC		8 V DC ... 36 V DC
Current consumption	< 35 mA (+ Iloop) @ 24 V	< 35 mA @ 24 V	< 16 mA @ 24 V
Reverse polarity protection	✓		
Short-circuit protection of the outputs	✓		-
MTTFd: mean time to dangerous failure	299 years (EN ISO 13849-1) ¹⁾	348 years (EN ISO 13849-1) ¹⁾	663 years (EN ISO 13849-1) ¹⁾

¹⁾ This product is a standard product and does not constitute a safety component as defined in the Machinery Directive. Calculation based on nominal load of components, average ambient temperature 40 °C, frequency of use 8760 h/a. All electronic failures are considered hazardous. For more information, see document no. 8015532.

Mechanical data

	4...20 mA, linearised	0...10 V, linearised	CANopen
Dimensions			
Aluminum	58 mm x 90 mm x 31 mm		
Plastic (PBT)	66 mm x 90 mm x 36 mm		-
Mass	200 g		
Housing material	Aluminum Plastic (PBT)		Aluminum

Ambient data

EMC	EN 61326-1, EN ISO 14982, EN ISO 13309
Enclosure rating	IP65/IP67 (according to IEC 60529)
Working temperature range	-40 °C ... +80 °C
Storage temperature range	-40 °C ... +85 °C
Resistance to shocks	100 g, 6 ms (according to EN 60068-2-27)
Resistance to vibration	10 g, 10 Hz ... 2,000 Hz (according to EN 60068-2-6)

TMS/TMM88 Advanced

Performance

	4...20 mA, linearised	0...10 V, linearised	CANopen
Number of axis	1 2		
Measuring range			
1-dimensional	360°		
2-dimensional	± 90°		
Resolution	0.01°		
Accuracy			
1-dimensional	Typ. ± 0.04°, max. ± 0.12°		
2-dimensional, ≤ ± 60°	Typ. ± 0.02°, max. ± 0.06°		Typ. ± 0.02°, max. ± 0.05°
≤ ± 70°	Typ. ± 0.04°, max. ± 0.12°		Typ. ± 0.04°, max. ± 0.1°
≤ ± 80°	Typ. ± 0.08°, max. ± 0.24°		Typ. ± 0.08°, max. ± 0.2°
≤ ± 85°	Typ. ± 0.16°, max. ± 0.48°		Typ. ± 0.16°, max. ± 0.4°
Cross-sensitivity (compensated)			
2-dimensional	Typ. ± 0.09°, max. ± 0.45°		
Temperature coefficient (zero point)	Typ. +0,0088°/K, -0,0102°/K ¹⁾	Typ. ±0,0083°/K ¹⁾	Typ. ±0,008°/K ¹⁾

¹⁾ Referring to the temperature of 25 °C.

	4...20 mA, linearised	0...10 V, linearised	CANopen
Limit frequency	0.1 Hz ... 25 Hz, 8. range (with digital filter)		
Sampling rate	100 Hz		80 Hz
Initialization time	330 ms		200 ms

¹⁾ Referring to the temperature of 25 °C.

Interfaces

	4...20 mA, linearised	0...10 V, linearised	CANopen
Load resistance max,	850 Ω ¹⁾	–	
Device profile	–		CiA DS-301, DS-410 v4.2.0 CiA (Device profile for inclination sensors) CiA DSP-305 (Layer Setting Service (LSS) and protocols)
Address setting	–		0...127, default: 10
Data transmission rate (baud rate)	–		10 kbit/s ... 1,000 kbit/s, default: baud rate detection
Status information	–		CANopen status via status LED
Bus termination	–		Via external termination resistance
Parameterising data	Measuring range, Zeroset, Limit frequency, preset value, inverting of counting direction, axis assignment, free adjustable outbound		Zeroset, Limit frequency, preset value, inverting of counting direction
Programmable/configurable	Over PGT-12-Pro		

¹⁾ On Us = 24 V.

Electrical data

	4...20 mA, linearised	0...10 V, linearised	CANopen
Connection type	Male connector M12, 5-pin	Male connector M12, 5-pin ¹⁾	1 x male connector M12, 5-pin, 1 x female connector M12, 5-pin
Operating voltage range	17 V DC ... 35 V DC	10 V DC ... 35 V DC	8 V DC ... 36 V DC
Current consumption	40 mA @ 24 V + Iloop	55 mA @ 24 V	< 33 mA @ 24 V
Reverse polarity protection	✓		
Short-circuit protection of the outputs	✓		–
MTTFd: mean time to dangerous failure	301 years (EN ISO 13849-1) ²⁾	287 years (EN ISO 13849-1) ²⁾	438 years (EN ISO 13849-1) ²⁾

¹⁾ Max. length of connection cable: 3 meter.

²⁾ This product is a standard product and does not constitute a safety component as defined in the Machinery Directive. Calculation based on nominal load of components, average ambient temperature 40 °C, frequency of use 8760 h/a. All electronic failures are considered hazardous. For more information, see document no. 8015532.

Mechanical data

Dimensions	66 mm x 90 mm x 36 mm
Mass	200 g
Housing material	Plastic (PBT)

Ambient data

EMC	EN 61326-1, EN ISO 14982, EN ISO 13309
Enclosure rating	IP65/IP67 (according to IEC 60529)
Working temperature range	-40 °C ... +80 °C
Storage temperature range	-40 °C ... +85 °C
Resistance to shocks	100 g, 6 ms (according to EN 60068-2-27)
Resistance to vibration	10 g, 10 Hz ... 2,000 Hz (according to EN 60068-2-6)

Ordering information

- **Resolution:** 0.01°

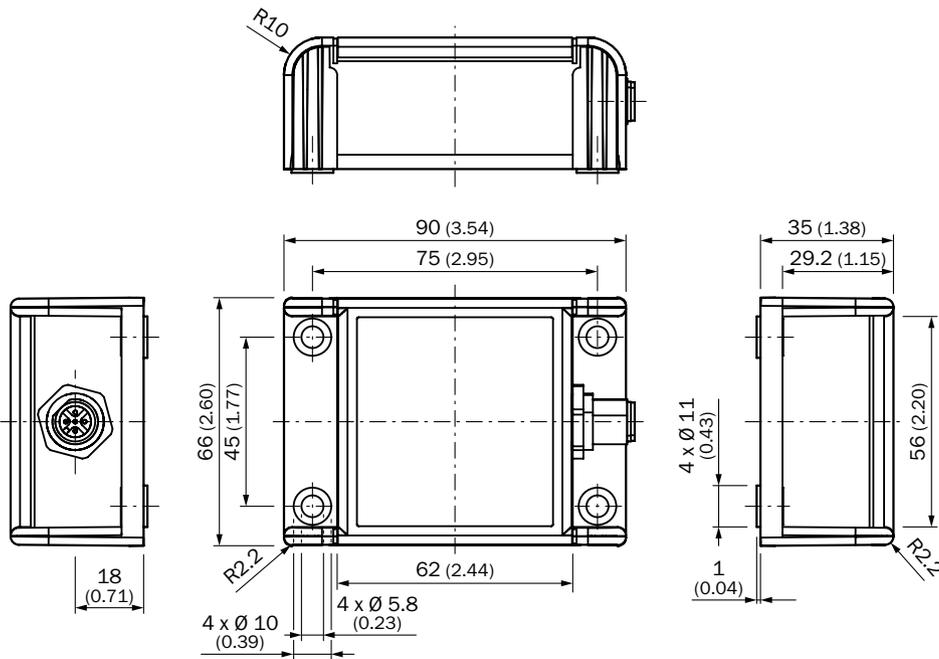
Number of axis	Measuring range	Housing material	Electrical interface	Type	Part no.
1-dimensional	360°	Aluminum	0...10 V, linearised	TMS88B-ALC360	1073792
			4...20 mA, linearised	TMS88B-AKC360	1073790
			CANopen	TMS88B-ACC360	1073788
		Plastic (PBT)	0...10 V, linearised	TMS88B-PLC360	1073796
			4...20 mA, linearised	TMS88B-PKC360	1073794
			CANopen	TMS88B-PC360	1073793
2-dimensional	± 90°	Aluminum	0...10 V, linearised	TMM88B-ALC090	1073793
			4...20 mA, linearised	TMM88B-AKC090	1073791
			CANopen	TMM88B-ACC090	1073789
		Plastic (PBT)	0...10 V, linearised	TMM88B-PLC090	1073797
			4...20 mA, linearised	TMM88B-PKC090	1073795
			CANopen	TMM88B-PC090	1073794

- **Housing material:** Plastic (PBT)
- **Resolution:** 0.01°

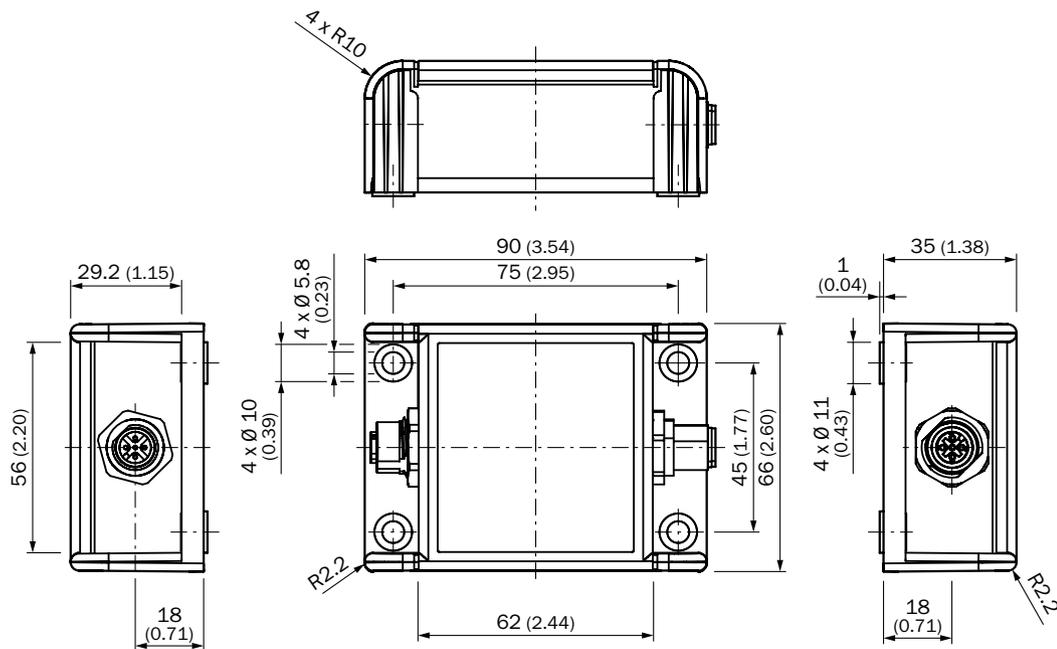
Number of axis	Measuring range	Electrical interface	Type	Part no.
1-dimensional	360°	0...10 V, linearised	TMS88A-PLC360	1073800
		4...20 mA, linearised	TMS88A-PKC360	1073798
		CANopen	TMS88A-PCI360	1073802
2-dimensional	± 90°	0...10 V, linearised	TMM88A-PLC090	1073801
		4...20 mA, linearised	TMM88A-PKC090	1073799
		CANopen	TMM88A-PCI090	1073805

Dimensional drawings (Dimensions in mm (inch))

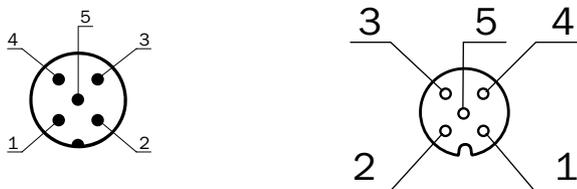
TMx88x-PxC



TMx88A-PCI



PIN assignment



TMS/TMM88 CANopen

PIN Male connector M12, 5-pin Female connector M12, 5-pin	Signal	Function
1	CAN Shield	Shielding
2	VDC	Supply voltage
3	GND/CAN GND	0V (GND)
4	CAN high	CAN signal
5	CAN low	CAN signal

TMS/TMM88 Analog

PIN Female connector M12, 5-pin	Signal	Function
1	VDC	Supply voltage
2	B-OUT	Sensor output B (default: Y)
3	GND	0V (GND)
4	A-OUT	Sensor output A (default: X)
5	TEACH	Input for Zero point setting

Accessories

Programming and configuration tools

Figure	Brief description	Type	Part no.
	Display Programming Tool for programmable SICK encoders AHS/AHM36 CANopen, inclination sensors TMS/TMM61 CANopen, TMS/TMM88 CANopen, TMS/TMM88 Analog and wire draw encoders with AHS/AHM36 CANopen. Compact dimensions, low weight and intuitive to use.	PGT-12-Pro	1076313

Plug connectors and cables

Connecting cables with female connector

Figure	Brief description	Cable length	Type	Part no.
	Head A: female connector, M12, 5-pin, angled, A-coded Head B: cable Cable: Analog, Power, drag chain use, PUR, halogen-free, shielded	1.5 m	DOL-1205-W1M5AC-SCO	6049455
		3 m	DOL-1205-W03MAC-SCO	6049456
		5 m	DOL-1205-W05MAC-SCO	6049457
		10 m	DOL-1205-W10MAC-SCO	6049458
	Head A: female connector, M12, 5-pin, straight, A-coded Head B: cable Cable: Analog, drag chain use, PUR, halogen-free, shielded	1.5 m	DOL-1205-G1M5AC-SCO	6049451
		3 m	DOL-1205-G03MAC-SCO	6049452
		5 m	DOL-1205-G05MAC-SCO	6049453
		10 m	DOL-1205-G10MAC-SCO	6049454

Figure	Brief description	Cable length	Type	Part no.
 Illustration may differ	Head A: female connector, M12, 5-pin, straight Head B: cable Cable: CANopen, DeviceNet, drag chain use, shielded	2 m	DOL-1205-G02MY	6053041
		5 m	DOL-1205-G05MY	6053042
		10 m	DOL-1205-G10MY	6053043

Dimensional drawings → [Page 24](#)

Connection cables with female connector and female connector

Brief description	Cable length	Type	Part no.
Head A: female connector, M12, 5-pin, straight Head B: female connector, D-Sub, 9-pin, straight Cable: Analog, shielded	0.5 m	DDL-2D05-G0M5BC8	2083831
Head A: female connector, M12, 5-pin, straight Head B: female connector, D-Sub, 9-pin, straight Cable: CANopen, shielded	0.5 m	DDL-2D05-G0M5BC9	2083805

Connection cables with female connector and male connector

Figure	Brief description	Cable length	Type	Part no.
 Illustration may differ	Head A: female connector, M12, 5-pin, straight Head B: male connector, M12, 5-pin, straight Cable: CANopen, DeviceNet, drag chain use, PUR, halogen-free, shielded	2 m	DSL-1205-G02MY	6053044
		5 m	DSL-1205-G05MY	6053045
		10 m	DSL-1205-G10MY	6053046

Dimensional drawings → [Page 26](#)

Female connectors (ready to assemble)

Figure	Brief description	Type	Part no.
	Head A: female connector, M12, 5-pin, straight Cable: CANopen, DeviceNet, shielded	DOS-1205-GA	6027534
	Head A: female connector, M12, 5-pin, straight Cable: unshielded	DOS-1205-G	6009719

Dimensional drawings → [Page 27](#)

Male connectors (ready to assemble)

Figure	Brief description	Type	Part no.
	Head A: male connector, M12, 5-pin, straight, A-coded Cable: CANopen, DeviceNet, shielded	STE-1205-GA	6027533
	Head A: male connector, M12, 5-pin, straight Cable: unshielded	STE-1205-G	6022083

Dimensional drawings → [Page 27](#)

Other connectors and cables

Figure	Brief description	Type	Part no.
	Head A: male connector, M12, 5-pin, straight Cable: CANopen, unshielded	CAN male connector	6021167

Dimensional drawings → [Page 27](#)

Adapters and distributors

T-junctions

Figure	Brief description	Type	Part no.
	Head A: female connector, M12, 5-pin Head B: male connector, M12 Cable: CANopen	DSC-1205T000025KM0	6030664

Dimensional drawings → Page 27

Y-junctions

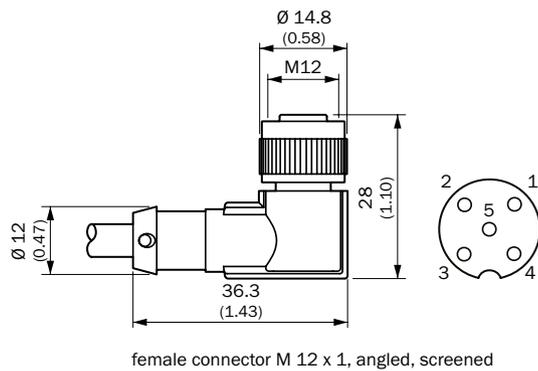
Figure	Brief description	Cable length	Type	Part no.
	Head A: female connector, M12, 5-pin, straight, A-coded Head B: female connector, M12, 5-pin, straight, A-coded Male connector, M12, 5-pin, straight, A-coded Cable: CAN, Power	0.5 m	Y-CAN cable	6027647

Dimensional drawings → Page 27

Dimensional drawings for accessories (Dimensions in mm (inch))

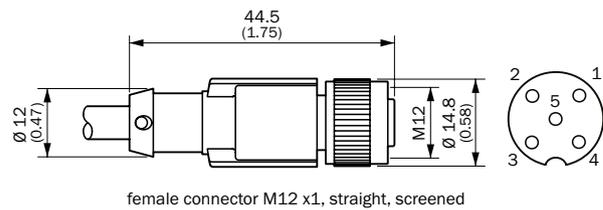
Connecting cables with female connector

DOL-1205-WxxxACSCO



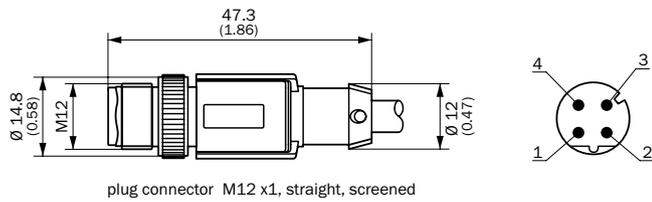
- ① Brown
- ② White
- ③ Blue
- ④ Black
- ⑤ Gray

DOL-1205-GxxMACSCO



- ① Brown
- ② White
- ③ Blue
- ④ Black
- ⑤ Gray

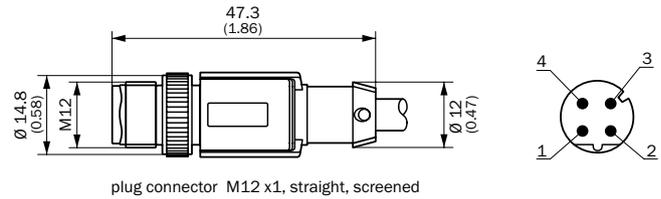
DOL-1205-GxxMY



- ① Shield wire
- ② Red
- ③ Black
- ④ White
- ⑤ Blue

Connection cables with female connector and male connector

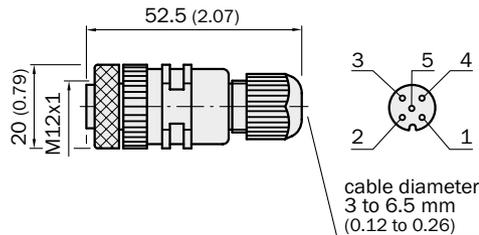
DSL-1205-GxxMY



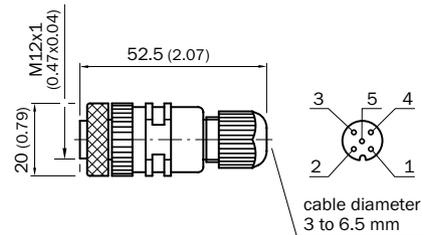
- ① Shield wire
- ② Red
- ③ Black
- ④ White
- ⑤ Blue

Female connectors (ready to assemble)

DOS-1205-GA

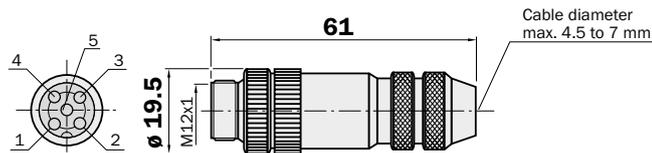


DOS-1205-G

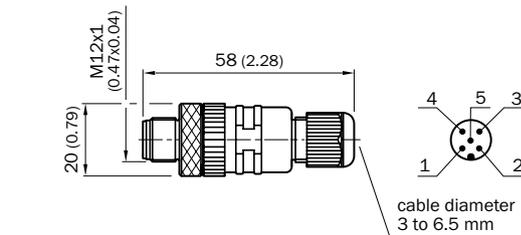


Male connectors (ready to assemble)

STE-1205-GA

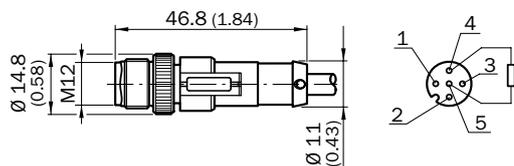


STE-1205-G



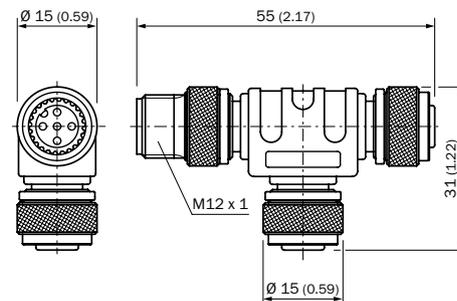
Other connectors and cables

CAN male connector



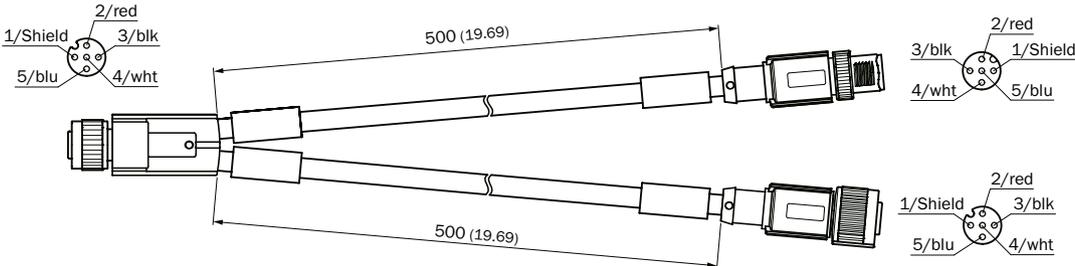
T-junctions

DSC-1205T000025KM0



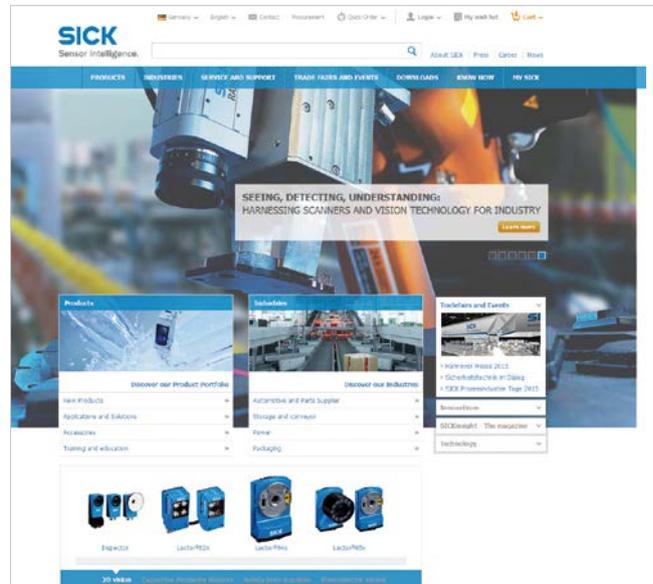
Y-junctions

Y-CAN cable



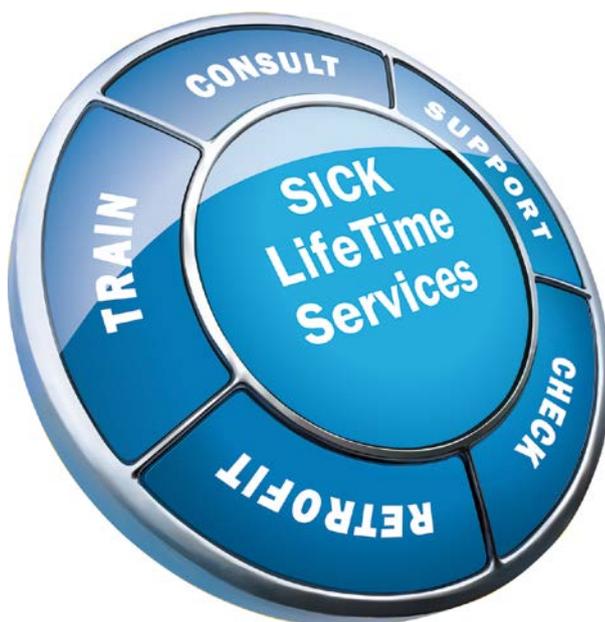
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