

SAC-5P-M12MR/ 0,8-PUR/M12FR SH -
Sensor/actuator cable

1045556
<https://www.phoenixcontact.com/us/products/1045556>

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Sensor/actuator cable, 5-position, PUR halogen-free, black-gray RAL 7021, shielded (Advanced Shielding Technology), Plug angled M12 SPEEDCON, coding: A, on Socket angled M12 SPEEDCON, coding: A, cable length: 0.8 m

Commercial data

Item number	1045556
Packing unit	1 pc
Minimum order quantity	25 pc
Product key	AF1CKA
GTIN	4055626639000
Weight per piece (including packing)	64 g
Weight per piece (excluding packing)	64 g
Country of origin	PL

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Technical data

Product properties

Product type	Sensor/actuator cable
Number of positions	5
Shielded	yes

Connector

Connection 1

Type	Plug angled M12 SPEEDCON
Number of positions	5
Locking type	SPEEDCON
Coding type	A

Connection 2

Type	Socket angled M12 SPEEDCON
Number of positions	5
Locking type	SPEEDCON
Coding type	A

Cable/line

Cable length	0.8 m
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PUR halogen-free black [PUR]

Dimensional drawing	
Cable weight	43 kg/km
UL AWM Style	20549 / 10493 (80°C/300 V)
Number of positions	5
Shielded	yes
Cable type	PUR halogen-free black [PUR]
Conductor structure signal line	42x 0.10 mm
AWG signal line	22
Conductor cross-section	5x 0.34 mm ² (Signal line)
Wire diameter incl. insulation	1.27 mm ±0.05 mm (Signal line)
External cable diameter	5.30 mm ±0.25 mm
Outer sheath, material	PUR
External sheath, color	black-gray RAL 7021

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Conductor material	Bare Cu litz wires
Material wire insulation	PP
Single wire, color	brown, white, blue, black, gray
Thickness, insulation	≥ 0.21 mm
Thickness, outer sheath	approx. 0.50 mm
Overall twist	5 wires around filler to the core
Optical shield covering	80 %
Max. conductor resistance	max. 57 Ω/km (at 20 °C)
Insulation resistance	70 GΩ*km (at 20 °C)
Nominal voltage, cable	300 V (at 20 °C)
Test voltage Core/Core	3000 V (at 20 °C)
Smallest bending radius, fixed installation	26 mm
Smallest bending radius, movable installation	52 mm (up to +60 °C)
Dynamic load capacity (bending)	Max. bending cycles: 10000000, Bending radius: 52 mm, Traversing path: 10 m, Traversing rate: 3 m/s, Acceleration: 10 m/s ²
Dynamic load capacity (torsion)	Torsion: ±180 °/m, Torsion cycles: ≥5000000, Torsional frequency: 35 cycles/min.
Halogen-free	in accordance with DIN VDE 0472 part 815 in accordance with DIN EN 50267-2-1
Flame resistance	in accordance with UL 758/1581 FT2 DIN EN 60332-2-2 (20 s)
Resistance to oil	in accordance with DIN EN 60811-2-1
Other resistance	Highly resistant to acids, alkaline solutions and solvents hydrolysis and microbe resistant Resistant to salt water partly UV-resistant (in accordance with DIN EN ISO 4892-2-A) abrasion-resistant
Special properties	Flexible cable conduit capable Silicone-free Free of substances which would hinder coating with paint or varnish Low adhesion surface
Ambient temperature (operation)	-40 °C ... 80 °C (cable, fixed installation) -25 °C ... 80 °C (Cable, flexible installation)

Environmental and real-life conditions

Specification	IEC 60512-6-4:2002-02
Requirements, Contact resistance	Resistance difference $\Delta R \leq 15 \text{ m}\Omega$ (for each channel)
Requirements, visual check	No defects that impair normal functionality.
Lowest frequency	10 Hz
Highest frequency	500 Hz
Amplitude	0.35 mm
Acceleration	5g
Sweep speed	1 octave/min

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No. of cycles	10
Test directions	X-, Y- and Z-axis
Specification	IEC 60512-6-3:2002-02
Requirements, Contact resistance	Resistance difference $\Delta R \leq 15 \text{ m}\Omega$ (for each channel)
Requirements, visual check	No defects that impair normal functionality.
Acceleration	50g
Test directions	X-, Y- and Z-axis
Pulse shape	Half-sine
Number of shocks per direction	3
Duration of the nominal shock	11 ms
Specification	IEC 60512-11-4:2002-02
Requirements, Contact resistance	Resistance difference $\Delta R \leq 15 \text{ m}\Omega$ (for each channel)
Requirements, insulation resistance	$R_i \geq 100 \text{ M}\Omega$
Requirements, dielectric strength	There must be no electrical flashovers or disruptive charges for the duration of the test. The maximum permissible leakage current must not be exceeded.
Requirements, visual check	No defects that impair normal functionality.
No. of cycles	5
Dwell time	30 min
Transition duration	$\leq 10 \text{ s}$
Minimum temperature	-40 °C
Maximum temperature	+85 °C
Specification	IEC 60512-11-9:2002-02
Requirements, insulation resistance	$R_i \geq 100 \text{ M}\Omega$
Requirements, visual check	No defects that impair normal functionality.
Test duration	16 h
Temperature for testing	85 °C
Specification	IEC 60512-11-12:2002-02
Requirements, visual check	No defects that impair normal functionality.
Test duration	24 h
Temperature for testing	40 °C
Specification	IEC 60512-11-10:2002-02
Requirements, visual check	No defects that impair normal functionality.
Test duration	2 h
Temperature for testing	-40 °C
Specification	IEC 60512-11-12:2002-02
Requirements, Contact resistance	Resistance difference $\Delta R \leq 15 \text{ m}\Omega$ (for each channel)
Requirements, insulation resistance	$R_i \geq 100 \text{ M}\Omega$
Requirements, dielectric strength	There must be no electrical flashovers or disruptive charges for the duration of the test. The maximum permissible leakage current must not be exceeded.
Requirements, insertion and withdrawal forces	Maximum allowable insertion force $F_{\text{insertion}} < 10 \text{ N}$ Maximum allowable withdrawal force $F_{\text{withdrawal}} < 15 \text{ N}$
Requirements, visual check	No defects that impair normal functionality.

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Test duration	24 h
Temperature for testing	40 °C
Specification	IEC 60512-1-1:2002-02
Requirements	Water that is sprayed against the housing as a jet from any direction must not have any harmful effect.
Requirements, insulation resistance	$R_i \geq 100 \text{ M}\Omega$
Requirements, dielectric strength	There must be no electrical flashovers or disruptive charges for the duration of the test. The maximum permissible leakage current must not be exceeded.
Requirements, visual check	No defects that impair normal functionality.
Test duration	1 min/m ² at least 3 min
Specification	IEC 60512-1-1:2002-02
Requirements	Water must not penetrate in a harmful quantity when the housing is temporarily submerged in water under standard pressure and time conditions.
Requirements, insulation resistance	$R_i \geq 100 \text{ M}\Omega$
Requirements, dielectric strength	There must be no electrical flashovers or disruptive charges for the duration of the test. The maximum permissible leakage current must not be exceeded.
Requirements, visual check	No defects that impair normal functionality.
Test duration	30 min
Specification	IEC 60512-1-1:2002-02
Requirements	Dust must not enter the housing.
Requirements, Contact resistance	Resistance difference $\Delta R \leq 15 \text{ m}\Omega$ (for each channel)
Requirements, insertion and withdrawal forces	Maximum allowable insertion force $F_{\text{insertion}} < 10 \text{ N}$ Maximum allowable withdrawal force $F_{\text{withdrawal}} < 15 \text{ N}$
Requirements, visual check	No defects that impair normal functionality.
Test duration	8 h
Specification	IEC 60512-13-5:2006-02
Requirements	No damage that can impair normal functionality. Connectors must only be able to be plugged in when they are in the correct position and combination. The design must prevent mismatching. Polarization prevents incorrect electrical contact.
Insertion force	1,5 x mating force; at least 35 N
Specification	IEC 60512-9-1:2010-03
Requirements, Contact resistance	Resistance difference $\Delta R \leq 15 \text{ m}\Omega$ (for each channel)
Requirements, visual check	No defects that impair normal functionality.
No. of cycles	50
Specification	IEC 60512-11-7:2003-05
Requirements	No damage (corrosion) to the metal body that impairs normal functionality.
Requirements, Contact resistance	Resistance difference $\Delta R \leq 15 \text{ m}\Omega$ (for each channel)
Test duration	4 days
Test procedure	Method 4
Specification	IEC 60512-9-1:2010-03

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Requirements, Contact resistance	Resistance difference $\Delta R \leq 15 \text{ m}\Omega$ (for each channel)
Requirements, insulation resistance	$R_i \geq 100 \text{ M}\Omega$
Requirements, dielectric strength	There must be no electrical flashovers or disruptive charges for the duration of the test. The maximum permissible leakage current must not be exceeded.
Requirements, visual check	No defects that impair normal functionality.
No. of cycles	50
Specification	IEC 60512-11-4:2002-02
Requirements, Contact resistance	Resistance difference $\Delta R \leq 15 \text{ m}\Omega$ (for each channel)
Requirements, insulation resistance	$R_i \geq 100 \text{ M}\Omega$
Requirements, dielectric strength	There must be no electrical flashovers or disruptive charges for the duration of the test. The maximum permissible leakage current must not be exceeded.
Requirements, visual check	No defects that impair normal functionality.
No. of cycles	5
Dwell time	30 min
Transition duration	$\leq 10 \text{ s}$
Minimum temperature	-40 °C
Maximum temperature	+85 °C
Specification	IEC 60512-9-1:2010-03
Requirements, Contact resistance	Resistance difference $\Delta R \leq 15 \text{ m}\Omega$ (for each channel)
Requirements, visual check	No defects that impair normal functionality.
No. of cycles	100
Requirements	No change in the material properties that would limit the intended use.
Test liquid	IRM 902
Specification	IEC 61373:2010-05
Requirements, Contact resistance	Resistance difference $\Delta R \leq 15 \text{ m}\Omega$ (for each channel)
Requirements, visual check	No defects that impair normal functionality.
Acceleration	30g
Test directions	X-, Y- and Z-axis
Category	2
Pulse shape	Half-sine
Number of shocks per direction	3
Shock duration	18 ms
Specification	IEC 61373:2010-05
Requirements, Contact resistance	Resistance difference $\Delta R \leq 15 \text{ m}\Omega$ (for each channel)
Requirements, visual check	No defects that impair normal functionality.
Lowest frequency	2 Hz
Highest frequency	250 Hz
Test directions	X-, Y- and Z-axis
Category	2

Electrical tests

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Specification	IEC 60512-2-1:2002-02
Requirements	Resistance difference $\Delta R \leq 15 \text{ m}\Omega$ (for each channel) $R_{\max} - R_{\text{wire}} \leq 10 \text{ m}\Omega$ (for each channel) $R_{\text{shield}} - R_{\text{cablesield}} \leq 100 \text{ m}\Omega$
Specification	IEC 60512-3-1:2002-02
Requirements, insulation resistance	$R_i \geq 100 \text{ M}\Omega$
Specification	IEC 60512-4-1:2003-05
Requirements, dielectric strength	There must be no electrical flashovers or disruptive charges for the duration of the test. The maximum permissible leakage current must not be exceeded.
Test voltage	1 kV AC
Test duration	60 s
Specification	IEC 60512-9-2:2011-11
Requirements	The sum of the ambient temperature and temperature rise of a connector must not exceed the upper limiting temperature.
Requirements, Contact resistance	Resistance difference $\Delta R \leq 15 \text{ m}\Omega$ (for each channel)
Requirements, insulation resistance	$R_i \geq 100 \text{ M}\Omega$
Requirements, dielectric strength	There must be no electrical flashovers or disruptive charges for the duration of the test. The maximum permissible leakage current must not be exceeded.
Requirements, visual check	No defects that impair normal functionality.
Test current	4 A
Test duration	1000 h
Temperature for testing	40 °C
Upper limiting temperature	85 °C
Specification	IEC 60352-2:2006-02
Connection method	Crimp connections

Mechanical tests

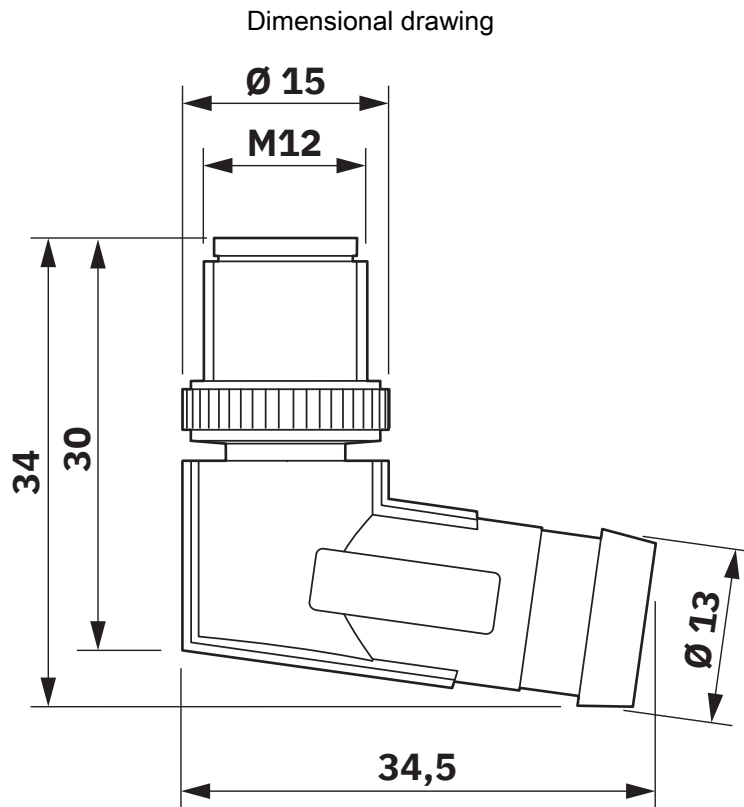
Specification	IEC 60512-1-1:2002-02
Requirements, visual check	No defects that impair normal functionality.
Specification	IEC 60512-1-2:2002-02
Requirements	All individual parts have been approved for the current revision status.
Specification	IEC 60512-13-2:2006-02
Requirements, insertion and withdrawal forces	Maximum allowable insertion force $F_{\text{insertion}} < 10 \text{ N}$ Maximum allowable withdrawal force $F_{\text{withdrawal}} < 15 \text{ N}$
Specification	IEC 60512-16-5:2008-07
Requirements	After 3 matings with the maximum gauge, the tested contacts must still be able to hold the minimum gauge.
Specification	IEC 60512-7-1:2010-03
Requirements, visual check	Loose parts or damage that would impair functionality are not permitted.

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Drawings



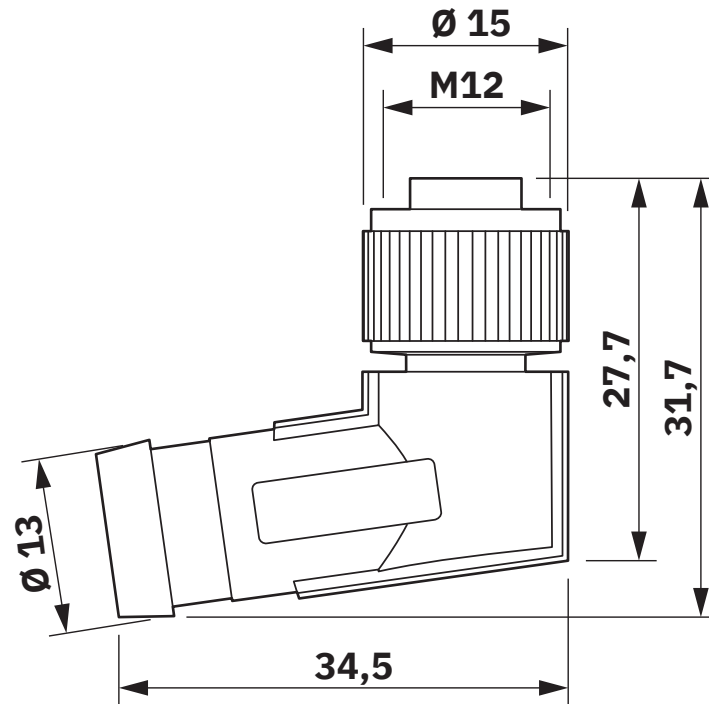
M12 x 1 male plug, angled, shielded

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Dimensional drawing



M12 x 1 male plug, angled, shielded

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Approvals

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	 UL Listed Approval ID: FILE E 221474			
	Nominal voltage U _N	Nominal current I _N	Cross section AWG	Cross section mm ²
keine				
	125 V	4 A	-	-

	 cUL Listed Approval ID: FILE E 221474			
	Nominal voltage U _N	Nominal current I _N	Cross section AWG	Cross section mm ²
keine				
	125 V	4 A	-	-

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Classifications

ECLASS

ECLASS-13.0	27060311
ECLASS-15.0	27060311

ETIM

ETIM 10.0	EC001855
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UNSPSC

UNSPSC 21.0	26121600
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Environmental product compliance

EU RoHS

Fulfills EU RoHS substance requirements	Yes, No exemptions
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China RoHS

Environment friendly use period (EFUP)	EFUP-E
	No hazardous substances above the limits

EU REACH SVHC

REACH candidate substance (CAS No.)	No substance above 0.1 wt%
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