

Kinetix Halogen-free PUR and PVC Single Motor Cables

Catalog Numbers 2090-CSBM1xx-xxLFxx, 2090-CSxM1xx-xxVAxx

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These 2090-Series motor cables with SpeedTec DIN connectors, designed by Rockwell Automation for optimal performance with Kinetix® 5500 and Kinetix 5700 drive families and Kinetix VP motors and actuators, offer best-in-class features and standards compliance. The single-cable design includes power, feedback, and brake conductors. Cable lengths offered in 1 m (3.3 ft) increments and SpeedTec connectors provide machine builders with complete control of the cable requirements in their machines.

This quick reference publication summarizes the important material, performance, and certification specifications for the product.

2090-CSxM1DG



2090-CSxM1DE



2090-CSxM1E1



2090-CSBM1xx-xxLFxx and
2090-CSxM1xx-xxVAxx Cables
Cross-sectional View



Summary of Changes

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

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General Specifications

Attribute	Continuous-flex, PUR (Halogen-free) Cables Cat. No. 2090-CSBM1xx-xxLFxx	Standard Non-flex, PVC Cables Cat. No. 2090-CSxM1xx-xxVAxx
Operating voltage	<ul style="list-style-type: none"> UL rating = 1000V CSA rating = 1000V 	
Operating temperature range	-40...90 °C (-40...194 °F)	-20...90 °C (-4...194 °F)
Storage temperature range	-40...70 °C (-40...158 °F)	-20...70 °C (-4...158 °F)
Power conductor color code	U = Brown V = Black W = Blue GND = Green/yellow stripe	
Connector style	SpeedTec	
Connector size	<ul style="list-style-type: none"> M23 for 18...14 AWG (1...2.5 mm²) cable M40 for 10...6 AWG (6 ...16 mm²) cable 	
Cable IP rating ⁽¹⁾	IP66/67	
Power conductor size	<ul style="list-style-type: none"> 18 AWG (1 mm²) 14 AWG (2.5 mm²) 10 AWG (6 mm²) 8 AWG (10 mm²) 6 AWG (16 mm²) 	
Power conductor stranding	IEC 60228 Class 6	IEC 60228 Class 5
Overall shield coverage	≥ 85%	
Color coding	IEC 60204-1, VDE 0293-308 ⁽³⁾	
DSL feedback pair wire size	22 AWG	
DSL feedback pair shield coverage	≥ 85%	
DSL feedback pair conductor color code	<ul style="list-style-type: none"> + = Blue - = White/blue 	
Brake pair wire size	<ul style="list-style-type: none"> 22 AWG for 18 AWG (1 mm²) cable 18 AWG for 14...10 AWG (2.5...6 mm²) cable 16 AWG for 8...6 AWG (10...16 mm²) cable 	
Brake pair conductor color code	<ul style="list-style-type: none"> + = Black - = White 	
Brake pair shield coverage	≥ 85%	
Maximum cable length ⁽²⁾	<ul style="list-style-type: none"> 90 m with Kinetix® 5700 drives 50 m with Kinetix 5500 drives 	
Feedback type supported	Hiperface DSL	
DSL Pair Impedance	110 Ω ± 10% @ 10 MHz	

(1) Rating is based on application and mating connection. See Kinetix Motion Accessories Specifications Technical Data, publication [KNX-TD004](#), for complete cable specifications.

(2) For information on maximum cable lengths see Kinetix 5700 Servo Drives User Manual, publication [2198-UM002](#) or Kinetix 5500 Servo Drives User Manual, publication [2198-UM001](#).

(3) Designed in accordance to VDE standards.

Cable Outside Diameter (OD)

Gauge AWG	Cable Cat. No.	Continuous-flex, PUR (Halogen-free) Cables Cat. No. 2090-CSBM1xx-xxLFxx mm (in.)	Standard Non-flex, PVC Cables Cat. No. 2090-CSxM1xx-xxVAxx mm (in.)
18 AWG brake	2090-CSBM1xx-18xxxx	13.2 (0.52)	13.2 (0.52)
18 AWG non-brake	2090-CSWM1xx-18xxxx	-	12.2 (0.48)
14 AWG brake	2090-CSBM1xx-14xxxx	15.2 (0.60)	15.2 (0.60)
14 AWG non-brake	2090-CSWM1xx-14xxxx	-	13.0 (0.51)
10 AWG brake	2090-CSBM1xx-10xxxx	18.0 (0.71)	18.0 (0.71)
8 AWG brake	2090-CSBM1xx-08xxxx	21.6 (0.85)	21.6 (0.85)
6 AWG brake	2090-CSBM1xx-06xxxx	24.0 (0.94)	24.0 (0.94)

Performance Specifications

Attribute	Continuous-flex, PUR (Halogen-free) Cables Cat. No. 2090-CSBM1xx-xxLFxx	Standard Non-flex, PVC Cables Cat. No. 2090-CSxM1xx-xxVAxx
Minimum static bending radius	5 x OD	
Maximum tensile strength (static application)	50 N/mm ²	
Maximum tensile strength (dynamic application)	20 N/mm ²	-

Continuous Flexing Parameters

Minimum dynamic bending radius	7 x OD	10 x OD	-
Rated flex-cycles (linear flexing applications) ⁽¹⁾	10 million cycles	15 million cycles	-
Maximum speed ⁽²⁾	5 m/s		-
Maximum acceleration ⁽²⁾	50 m/s ²		-
Maximum chain length ⁽²⁾	25 m		-
Reverse bending (tic-toc) cycles	5 million cycles		-

Torsional Parameters⁽³⁾

Maximum torsion	± 30 °/m	-
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(1) Expected continuous-flex life may decrease when flexing parameters and cables are at their minimum or maximum limits.

(2) Continuous-flex parameters are dependently related. Consult cable carrier manufacturer in accordance with maximum cable tensile strength to select the appropriate parameters while supported inside a cable carrier.

(3) Continuous-flex cable is designed for c-track applications and is not suitable for torsional applications. Consult with Technical Support for further information.

Environmental Specifications

Attribute	Continuous-flex, PUR (Halogen-free) Cables Cat. No. 2090-CSBM1xx-xxLFxx	Standard Non-flex, PVC Cables Cat. No. 2090-CSxM1xx-xxVAxx
Halogen-free	<ul style="list-style-type: none"> • IEC 60754-1 • EN 50267-2-1 • VDE 0472-815 ⁽¹⁾ 	-
NFPA-79 standard	Motor-cable matching and designed in accordance to NFPA-79	
AWM safety design	cURus UL recognized bulk cable per UL 758, CSA C22.2 (see Product Certifications website, rok.auto/certifications , for more information.)	
UL file	E327844-2	
UL AWM style	21209	21179
CSA recognition	AWM I/II A/B 90 °C	
Crush and impact	Tested to UL 1277	-
Flame-resistance (IEC and VDE)	<ul style="list-style-type: none"> • IEC 60332-1-2 • EN 50265-1-2 • VDE 0482-332-1-2:2017-06 ⁽¹⁾ 	<ul style="list-style-type: none"> • IEC: 60332-3-22, 60332-3-24, and 60332-1-2 • EN 50265-1-2 • VDE 0482-332-1-2:2017-06 ⁽¹⁾
US flame-resistance (UL)	UL 1581, VW-1	
Canada flame-resistance (CSA)	FT1, FT2	
Oil-resistance (hydrocarbons)	<ul style="list-style-type: none"> • EN 50363-10-2 • EN 60811.2.1 • UL 1581 • VDE 0472 part 803 A/B ⁽¹⁾ 	<ul style="list-style-type: none"> • EN 50363-4-1 • EN 60811.2.1 • UL 1581 • VDE 0472 part 803 A/B ⁽¹⁾
Sunlight resistance	UL 2556, maximum variation ±40%	
Abrasion-loss resistance	According to DIN ISO 4649-A	-
Hydrolyse and microbe resistance	EN 50363-10-2	-
Water absorption	168 hours according to UL 1581, IEC 60811	
Environmental certifications	RoHS 3, REACH, WEEE, CE	
Cable outer jacket color	DESINA Orange RAL 2003	
Relative humidity	5...95% non-condensing	
EcoLab chemical resistance	<ul style="list-style-type: none"> • P3-topactive DES - Vortexx • P3-topaz LD1 - Quorum Pink II HF • P3-topaz AC5 - FoamShine • P3-topax 66 - Enforce LP • P3-topax 990 - Quorum Clear V 	-
EU safety directives	<ul style="list-style-type: none"> • Machinery Directive 2006/42/EC • Low Voltage Directive 2006/95/EC • Electromagnetic compatibility EMC Directive 2004/108/EC • VDE 0285-525-2-21 (DIN EN50252-2-21 equivalent) ⁽¹⁾ 	

(1) Designed in accordance to VDE standards.

Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

Resource	Description
Kinetix Motion Accessories Specifications, publication KNX-TD004	Provides product specifications for 2090-Series motor and interface cables, motor-feedback connector kits, drive power components, and other servo drive accessory items.
Kinetix Rotary Motion Specifications, publication KNX-TD001	Product specifications for Kinetix VP, Kinetix MP, Kinetix TL and TLY, Kinetix RDB, and Kinetix HPK rotary motors.
Kinetix 5700 Servo Drives User Manual, publication 2198-UM002	Provides information on how to install, configure, startup, and troubleshoot your Kinetix servo drive system.
Kinetix 5500 Servo Drives User Manual, publication 2198-UM001	
Kinetix 5700 Drive Systems Design Guide, publication KNX-RM010	Provides system design guide to determine and select the required (drive specific) drive module, power accessory, connector kit, motor cable, and interface cable catalog numbers for your drive and motor/actuator motion control system. Included are system performance specifications and torque/speed curves (rotary motion) and force/velocity curves (linear motion) for your motion application.
Kinetix 5500 Drive Systems Design Guide, publication KNX-RM009	
Motion Analyzer System Sizing and Selection Tool website https://motionanalyzer.rockwellautomation.com/	Provides comprehensive motion application sizing tool used for analysis, optimization, selection, and validation of your Kinetix Motion Control system.
Rockwell Automation Configuration and Selection Tools, website http://ab.rockwellautomation.com	Provides online product selection and system configuration tools, including AutoCAD (DXF) drawings.
Product Certifications website, rok.auto/certifications .	Provides declarations of conformity, certificates, and other certification details.
Rockwell Automation Industrial Automation Glossary, publication AG-7.1	A glossary of industrial automation terms and abbreviations.

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Local Technical Support Phone Numbers	Locate the telephone number for your country.	rok.auto/phonesupport
Literature Library	Find installation instructions, manuals, brochures, and technical data publications.	rok.auto/literature
Product Compatibility and Download Center (PCDC)	Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes.	rok.auto/pcdc

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