

# Kinetix 6000M Series A Network Cable

Catalog Numbers 2090-CNSSPSS-AAxx, 2090-CNSRPRS-AAxx, 2090-CNSSPRS-AAxx,  
2090-CNSRPSS-AAxx

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## About the Network Cable

A Kinetix® 6000M integrated drive-motor system transfers motion commands to the integrated drive-motors (IDMs) through a daisy-chain network using twisted wire-pairs for transmitting and receiving the signals.

The network communication cable is installed between the Kinetix 6000M integrated drive-motor power interface module (IPIM) and each integrated drive-motor in the system, see the Kinetix 6000M Cable Routing Diagram on [page 4](#).

## Important User Information

Solid state equipment has operational characteristics differing from those of electromechanical equipment. Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls, publication [SGI-1.1](#), is available from your local Rockwell Automation sales office or online at <http://www.rockwellautomation.com/literature> describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

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Throughout this manual, when necessary, we use notes to make you aware of safety considerations.

	<b>WARNING:</b> Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.
	<b>ATTENTION:</b> Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard and recognize the consequences.
	<b>SHOCK HAZARD:</b> Labels may be on or inside the equipment, for example, drive or motor, to alert people that dangerous voltage may be present.
	<b>BURN HAZARD:</b> Labels may be on or inside the equipment, for example, drive or motor, to alert people that surfaces may reach dangerous temperatures.
<b>IMPORTANT</b>	Identifies information that is critical for successful application and understanding of the product.

## Before You Begin

Remove all packing material from within and around the item. After unpacking, verify the catalog number against the purchase order, and visually inspect the cable and each connector for damage. If necessary, immediately notify the carrier of any shipping damage.

Cables are stored and shipped in a coil, and will retain this shape unless you straighten the cable. To straighten a cable, hang a short cable from its mid-point or lay a long cable on the floor in a straight line. Any coiling that persists should relax within 24 hours. Doing this results in a cable that is easier to install.

Observe the following precautions when installing the cables in a servo system. Failure to observe these safety notices could result in personal injury or damage to the motor and equipment.



**SHOCK HAZARD:** To avoid the hazard of electrical shock, be sure to ground any cable providing power at a minimum of one point. To prevent the build-up of electrical energy, factory-supplied cables use one of these grounding techniques:

- Bond the overall shield to the connector housing.
- Make sure there is a direct connection-to-ground for each cable shield.
- Connect an exposed cable braid or a ground wire, if present, to the power cable clamp, housing, or another suitable chassis ground.

Failure to observe these safety procedures could result in personal injury or equipment damage.



**ATTENTION:** Arcing or unexpected motion can occur if cables are connected or disconnected while power is applied to the IDM system. Before working on an IDM system, disconnect power and wait the full time interval as indicated in the warning on the IPIM module or verify the DC bus voltage at the IPIM module measures less than 50V DC.

Failure to observe this precaution could result in severe bodily injury or loss of life, and damage to the product will occur.



**ATTENTION:** The maximum length of cabling between the IPIM and the last IDM unit in the system must not exceed 100 m (328 ft). Also, a maximum of two extension cables may be connected between an IDM unit and the preceding IPIM module or IDM unit.

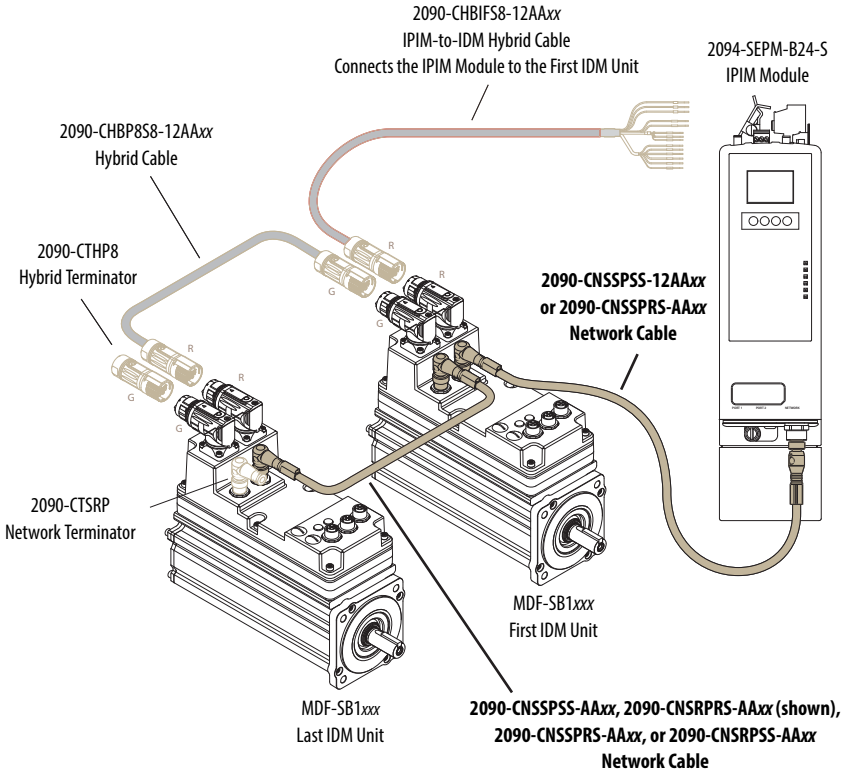


**ATTENTION:** The examples in this publication show the available connections, some of which may not be appropriate for your specific installation. Refer to your system level installation instructions or user manual for recommended wire trim lengths, and wiring examples appropriate to your application.

Do not connect unused wires. Trim and finish unused wires to prevent accidental contact with other wires or wire shields, or with a ground connection.

Failure to observe these safety procedures could result in personal injury or damage to the motor and equipment.

### Kinetix 6000M Cable Routing Diagram



## Install the Cable

Follow these steps when installing a 2090-CNSSPSS-AAxx, 2090-CNSRPRS-AAxx, 2090-CNSSPRS-AAxx or 2090-CNSRPSS-AAxx network cable.

1. Verify power to the IPIM module is removed before making any connections or disconnecting any components of the system.

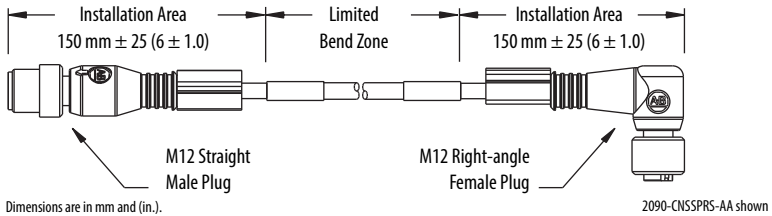


**ATTENTION:** Arcing or unexpected motion can occur if cables are connected or disconnected while power is applied to the IDM system. Before working on an IDM system, disconnect power and wait the full time interval as indicated in the warning on the IPIM module or verify the DC bus voltage at the IPIM module measures less than 50V DC.

Failure to observe this precaution could result in severe bodily injury or loss of life, and damage to the product will occur.

2. Before beginning any cable bend, determine the recommended installation areas, and the clearance required from the features shown in the diagram.

Clearance from these areas should be greater than or equal to the cable diameter.

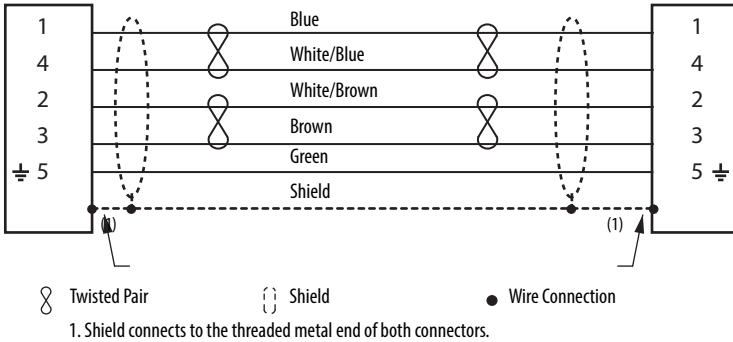


3. Keep cable bends within the bend radius listed in the Specifications on [page 7](#).  
General guidelines for the bend radius of a cable are listed below, however, individual cables may have additional restrictions:
  - Network cables have a static or one-time bend radius of twelve times the cable diameter.
4. Observe these restrictions when installing these cables:
  - Prevent the cable from flexing within 150 ± 25 mm (6 ± 1 in.) installation areas.
  - Bend cables to a specific shape only in the bend zone area.
  - Provide cable supports at 3 m (10 ft) intervals along the cable run to reduce tension and flexing at the connectors and other features on the cable.
5. Apply 0.8...1.2 N•m (7...11 lb•in) of torque to fully seat the contacts and secure the connection.

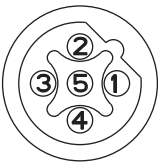
## Schematic and Connector Pinouts

The diagrams provides wire colors and pinouts for the Kinetix 6000M network cables.

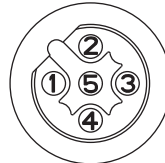
### Network Communication Cable Schematic



### Network Communication Cable Pinouts



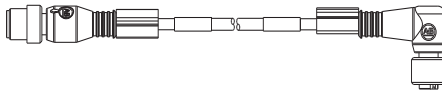
Male Connector Pinouts



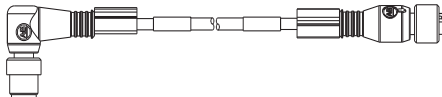
Female Connector Pinouts

### Network Communication Cable Configurations

2090-CNSSPRS-AAxx  
Straight Male and Right-angle Female



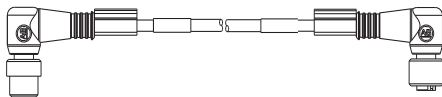
2090-CNSRPPS-AAxx  
Right-angle Male and Straight Female <sup>(1)</sup>



2090-CNSSPS-AAxx  
Straight Male and Straight Female



2090-CNRSPRS-AAxx  
Right-angle Male and Right-angle Female <sup>(1)</sup>



<sup>(1)</sup> Not for connection to an IPIM module.

## Specifications

Additional specifications for each cable are available in the Kinetix Motion Accessories Technical Data, publication [GMC-TD004](#).

<b>Attribute</b>	<b>2090-CNSSPSS-AAxx, 2090-CNSRPRS-AAxx, 2090-CNSSPRS-AAxx, 2090-CNSRPSS-AAxx</b>
Wire size	22 AWG
Diameter <sup>(1)</sup>	7.75 mm (0.30 in.)
Bend radius	93.0 mm (3.6 in.)
Installation areas <sup>(2)</sup>	
Connector install torque	0.8...1.2 N•m (7...11 lb•in)

(1) Cable diameter tolerance is  $\pm 0.13$  mm (0.005 in.).

(2) The installation areas are 300 mm  $\pm 25$  (12 in.  $\pm 1.0$ ) in length at both ends of the cable. Secure this area with a rigid mount that prevents the cable from flexing where it connects to other components.

## Additional Resources

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

Resource	Description
Integrated Drive-Motor User Manual, publication <a href="#">2094-UM003</a>	Information on installing, configuring, starting, and troubleshooting a servo drive system with a servo motor.
Kinetix 6000M Integrated Drive-Motor System Power Interface Module Installation Instructions, publication <a href="#">2094-IN016</a>	Information on the installation of your Kinetix 6000M IDM Power Interface Module (IPIM).
Kinetix 6000M Integrated Drive Motor Installation Instructions, publication <a href="#">MDF-IN001</a>	Information on the installation of your Kinetix 6000M integrated drive-motor (IDM).
Allen-Bradley Industrial Automation Glossary, publication <a href="#">AG-7.1</a>	A glossary of industrial automation terms and abbreviations.
System Design for Control of Electrical Noise Reference Manual, publication <a href="#">GMC-RM001</a>	Information, examples, and techniques designed to minimize system failures caused by electrical noise.
Kinetix Motion Control Selection Guide, publication <a href="#">GMC-SG001</a>	General product specifications for Kinetix motion control products.

You can view or download publications at <http://www.rockwellautomation.com/literature>. To order paper copies of technical documentation, contact your Allen-Bradley® distributor or Rockwell Automation® sales representative.

(1)

# Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products.

At <http://www.rockwellautomation.com/support>, you can find technical manuals, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools. You can also visit our Knowledgebase at <http://www.rockwellautomation.com/knowledgebase> for FAQs, technical information, support chat and forums, software updates, and to sign up for product notification updates.

or an additional level of technical phone support for installation, configuration and troubleshooting, we offer TechConnect® support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit <http://www.rockwellautomation.com/support/>.

## Installation Assistance

If you experience a problem within the first 24 hours of installation, please review the information that's contained in this manual. You can also contact a special Customer Support number for initial help in getting your product up and running.

United States or Canada	1.440.646.3434
Outside United States or Canada	Use the <a href="#">Worldwide Locator</a> at <a href="http://www.rockwellautomation.com/support/americas/phone_en.html">http://www.rockwellautomation.com/support/americas/phone_en.html</a> , or contact your local Rockwell Automation representative.

## New Product Satisfaction Return

Rockwell Automation tests all of its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned, follow these procedures.

United States	Contact your distributor. You must provide a Customer Support case number (call the phone number above to obtain one) to your distributor to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for the return procedure.

## Documentation Feedback

Your comments will help us serve your documentation needs better. If you have any suggestions on how to improve this document, complete this form, publication [RA-DU002](#), available at <http://www.rockwellautomation.com/literature/>.

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Publication 2090-IN034B-EN-P - March 2012

PN-143958

Supersedes Publication 2090-IN034A-EN-P - February 2012

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