

# Kinetix 6000M Hybrid Cable

Catalog Number 2090-CHBP8S8-12AAxx

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## About the IDM-to-IDM Hybrid Cable

The Installation Instructions hybrid cable connects one Kinetix® 6000M integrated drive-motor (IDM) unit to another IDM unit with M23 connectors, one male and one female at the cable ends.

## 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.

	<p><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.</p>
	<p><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.</p>
	<p><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.</p>
	<p><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.</p>
<p><b>IMPORTANT</b></p>	<p>Identifies information that is critical for successful application and understanding of the product.</p>

## 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 hybrid connectors on the IDM unit are designed to be rotated into a fixed position during motor installation, and remain in that position without further adjustment. Strictly limit the applied forces and the number of times the hybrid connectors are rotated to make sure the connectors meet the specified IP ratings.

Apply force only to the connector and cable plug. Do not apply force to the cable extending from the cable plug. No tools, for example pliers or vise-grips, should be used to assist with the rotation of the connector.

Failure to observe safety precautions could result in damage to the IDM unit and its components.



**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.

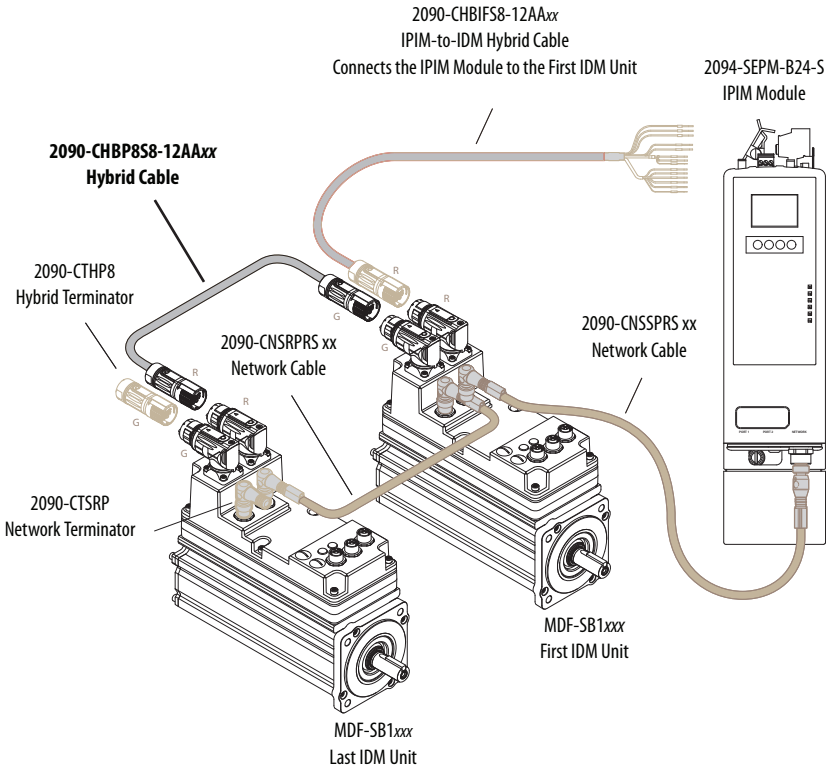
Failure to observe these safety procedures could result in personal injury or damage to the motor and equipment.



**ATTENTION:** Do not tightly gather or coil the excess length of a hybrid cable. Heat is generated within a cable whenever power is applied. Always position a hybrid cable to freely dissipate heat. A hybrid cable should not be coiled, except for temporary use when building or testing a machine. If you temporarily coil a hybrid cable, you must also derate the cable to meet local code or follow an authoritative directive, such as Engineering Section 310.15(C) of the NEC Handbook.

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

### Kinetix 6000M Cable Routing Diagram



**IMPORTANT**

The colored rings on the hybrid cable connector and the mating cable must match: red-to-red or green-to-green.

## Install the Cable

Follow these steps when installing a 2090-CHBP8S8-12AAxx hybrid cable.

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

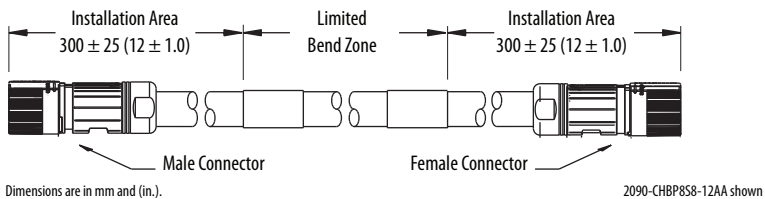


**ATTENTION:** Arcing or unexpected motion can occur if cables are connected or disconnected while power is applied to the IDM system. Before working on an IDM system, disconnect power and wait the full time interval as indicated in the warning on the IPIM module or verify the DC bus voltage at the IPIM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

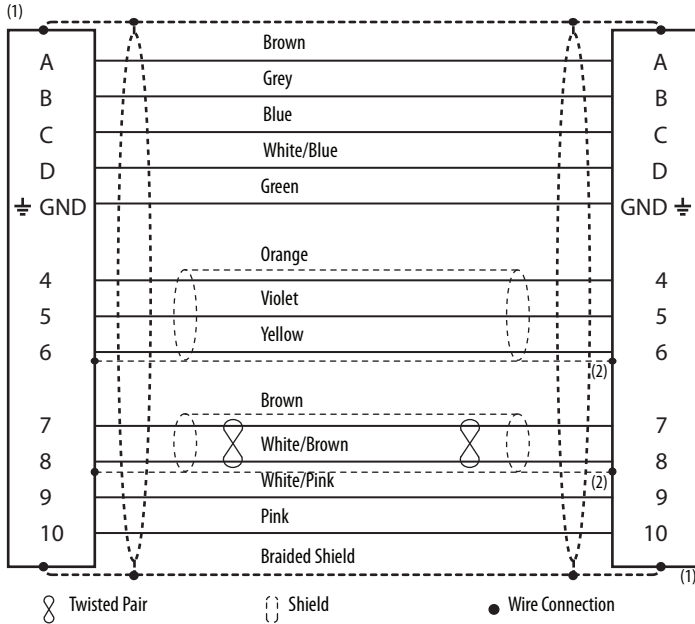


3. Keep cable bends within the bend radius listed in the Specifications on [page 7](#). Hybrid cables have a bend radius of twelve times the cable diameter.
4. Observe these restrictions when installing these cables:
  - Prevent the cable from flexing within  $150 \pm 25$  mm ( $6 \pm 1$  in.) installation 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. Tighten each M23 connector approximately  $45^\circ$  to fully seat the contacts and secure each connection.

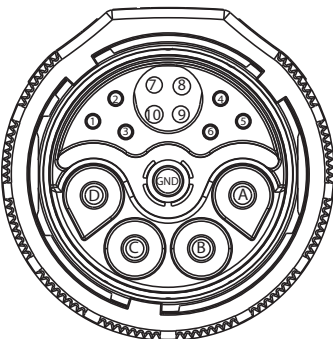
### IMPORTANT

The internal O-ring is self-conforming and requires a short period between each connect/disconnect cycle to expand to full size. Let the O-ring expand for at least 60 seconds before reconnecting a hybrid cable.

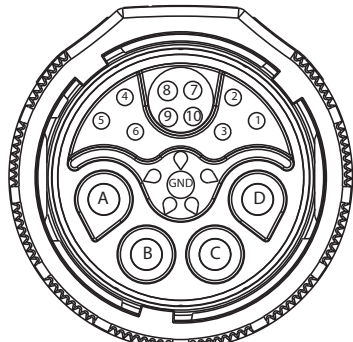
2090-CHBP858-12AAxx Cable Schematic and Connector Pinouts



1. The braided shield connects to the cable grounding ring with a 360° connection.
2. The drain wire connects to the cable grounding ring.



Male Plug



Female Plug

## Specifications

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

Attribute	2090-CHBP858-12AAxx
Wire Sizes:	
DC Bus (650V DC)	12 AWG
Control Power (42V DC)	16 AWG
Communication (CAN, Safety, SYSOK)	22 AWG
Diameter <sup>(1)</sup>	14.2 mm (0.56 in.)
Bend radius	170 mm (6.70 in.)
O-ring expansion period	One minute between disconnection and reconnection.

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

## Additional Resources

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

Resource	Description
Kinetix 6000M 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 Installation Instructions, publication <a href="#">MDF-IN001</a>	Information on the installation of your Kinetix 6000M integrated drive-motor unit.
Kinetix 6000M Integrated Drive-Motor Power Interface Module Installation Instructions, publication <a href="#">2094-IN016</a>	Information on the installation of your Kinetix 6000M integrated drive-motor power interface module
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.
Allen-Bradley Industrial Automation Glossary, publication <a href="#">AG-7.1</a>	A glossary of industrial automation terms and abbreviations.
Kinetix Rotary Motion Specifications Technical Data, publication <a href="#">GMC-TD001</a>	Catalog numbers and product specifications, including performance, environmental, certifications, load force, and dimension drawings for Allen-Bradley rotary motors.
Kinetix Motion Control Accessories Technical Data, publication <a href="#">GMC-TD004</a>	Catalog numbers, specifications, and dimensions for Allen-Bradley servo drive accessories.

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.

# 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.

For 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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