QuickStick 100 to QuickStick 150 Motor Migration Guide

Catalog Numbers 700-1433-02, 700-1433-03, MMI-QS-S10E10, MMI-QS-S10E05, MMI-QS-S10E03

Allen-Bradley
by ROCKWELL AUTOMATION

Migration Guide

Original Instructions

Important User Information

Read this document and the documents listed in the additional resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

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.

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

WARNING: 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.

ATTENTION: 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 consequence.

IMPORTANT Identifies information that is critical for successful application and understanding of the product.

These labels may also be on or inside the equipment to provide specific precautions.

SHOCK HAZARD: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.

BURN HAZARD: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.

ARC FLASH HAZARD: Labels may be on or inside the equipment, for example, a motor control center, to alert people to potential Arc Flash. Arc Flash will cause severe injury or death. Wear proper Personal Protective Equipment (PPE). Follow ALL Regulatory requirements for safe work practices and for Personal Protective Equipment (PPE).

The following icon may appear in the text of this document.

Identifies information that is useful and can help to make a process easier to do or easier to understand.

Notes:

About This Publication

This document provides an overview of the steps to migrate a system from QuickStick® 100 motors to QuickStick 150 motors.

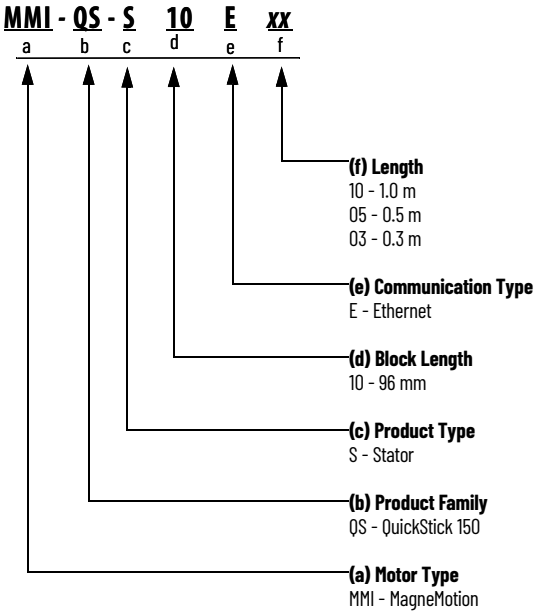
Download Firmware, AOP, EDS, and Other Files

Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes from the Product Compatibility and Download Center (PCDC) at rok.auto/pcdc.

Catalog Number Explanation

Use the catalog number diagrams that follow to understand the configuration of the QuickStick 100 and QuickStick 150 motors. For questions regarding product availability, contact your distributor.

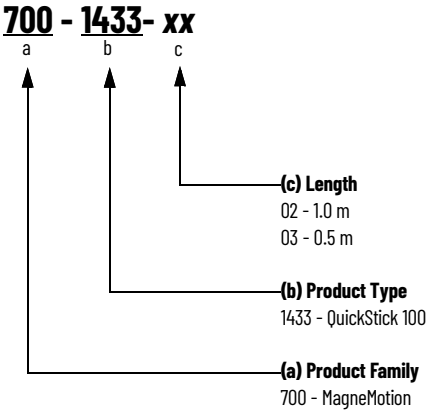
QuickStick 150 Motors



Lower-case letters that are shown under the catalog number indicate the catalog number position.

Available Catalog Numbers
MMI-QS-S10E10
MMI-QS-S10E05
MMI-QS-S10E03

QuickStick 100 Motors



Lower-case letters that are shown under the catalog number indicate the catalog number position.

Available Catalog Numbers
700-1433-02
700-1433-03

Integrated Architecture Tools

The Integrated Architecture® system tools can help you plan and configure a system, and migrate system architectures. For more information, go to:

https://www.rockwellautomation.com/en-us/support/product/product-selection-configuration/control-systems-configuration-tools.html

Migration Services

Throughout the product lifecycle, as products mature, Rockwell Automation will be there as your partner to help you get the most out of your current equipment, to help you determine your next steps, and to help you lay out a plan for the transition to newer technology.

Whether you choose to migrate all at once or use our unique, phased approach to help minimize the costs, risks, and complexities that are involved with managing legacy products and systems, Rockwell Automation has the tools and the experience to guide you through the transition.

For more information, see Migration Solutions Brochure, publication MIGRAT-BR002.

Additional Resources

These documents contain additional information concerning related products from Rockwell Automation. You can view or download publications at rok.auto/literature.

Resource	Description
MagneMotion® QuickStick and QuickStick® HT™ Design Guide, publication MMI-RM001	This manual explains how to design and configure the track layout and transport system.
MagneMotion System Configurator User Manual, publication MMI-UM046	This manual explains how to use the QuickStick Configurator to create and modify the Node Controller Configuration File (Configuration File) for the transport system.
QuickStick Motors Technical Data, publication MMI-TD051	This manual includes technical specifications for the QuickStick 100 and QuickStick 150 motors.
MagneMotion Node Controller Interface User Manual, publication MMI-UM001	This manual explains how to use the supplied interfaces to configure and administer node controllers that are used with independent cart technology (ICT) transport systems. This manual also provides basic troubleshooting information.
MagneMotion LSM Synchronization Option User Manual, publication MMI-UM005	This manual explains how to install, operate, and maintain the linear synchronous motor (LSM) synchronization option for use with independent cart technology (ICT) transport systems.
MagneMotion NCHost TCP/IP Interface Utility User Manual, publication MMI-UM010	This manual explains how to use the NCHost TCP/IP Interface Utility to run an independent cart technology (ICT) transport system for testing and debugging. This manual also explains how to develop Demo Scripts to automate vehicle motion for that testing.
MagneMotion Virtual Scope Utility User Manual, publication MMI-UM011	This manual explains how to install and use the MagneMotion Virtual Scope utility. This utility provides real-time feedback of the change in linear synchronous motor (LSM) performance parameters.
MagneMotion Node Controller Hardware User Manual, publication MMI-UM013	This manual explains how to install and maintain the node controllers that are used with transport systems.
MagneMotion Host Controller TCP/IP Communication Protocol User Manual, publication MMI-UM003	These manuals describe the communication protocols between the high-level controller and a host controller. These manuals also provide basic troubleshooting information.
MagneMotion Host Controller EtherNet/IP™ Communication Protocol User Manual, publication MMI-UM004	
Power Supply Reference Manual 1606-XLS960F-3, publication 1606-RM032	The manual provides the specifications for the 1606 power supplies.
EtherNet/IP Network Devices User Manual, publication ENET-UM006	Describes how to configure and use EtherNet/IP devices to communicate on the EtherNet/IP network.
Ethernet Reference Manual, publication ENET-RM002	Describes basic Ethernet concepts, infrastructure components, and infrastructure features.
System Security Design Guidelines Reference Manual, publication SECURE-RM001	Provides guidance on how to conduct security assessments, implement Rockwell Automation products in a secure system, harden the control system, manage user access, and dispose of equipment.
UL Standards Listing for Industrial Control Products, publication CMPNTS-SR002	Assists original equipment manufacturers (OEMs) with construction of panels, to help ensure that they conform to the requirements of Underwriters Laboratories.
American Standards, Configurations, and Ratings: Introduction to Motor Circuit Design, publication IC-AT001	Provides an overview of American motor circuit design based on methods that are outlined in the NEC.
Industrial Components Preventive Maintenance, Enclosures, and Contact Ratings Specifications, publication IC-TD002	Provides a quick reference tool for Allen-Bradley® industrial automation controls and assemblies.
Safety Guidelines for the Application, Installation, and Maintenance of Solid-state Control, publication SGI-1.1	Designed to harmonize with NEMA Standards Publication No. ICS 1.1-1987 and provides general guidelines for the application, installation, and maintenance of solid-state control in the form of individual devices or packaged assemblies incorporating solid-state components.
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, rok.auto/certifications.	Provides declarations of conformity, certificates, and other certification details.

Replacement Considerations

Before You Begin

Migrations must be done on a path-by-path basis. If you migrate one motor to the QuickStick® 150 system, then all additional motors on the same path in that system must be migrated to the QS 150 system. Additional considerations include:

- Design considerations
- Mounting
- Power connections
- Network connections
- Software configuration

Product Comparison

The QS 150 motors have the following performance increases compared to the QS 100 motors:

- Increased peak force
- Increased maximum velocity
- Improved repeatability
- Improved communications bandwidth via Ethernet network communication
- Faster startup speed with zero move startup
- Improved ingress protection
- Easier installation with a pre-designed power bus

See the Electrical Specifications section of the QuickStick Motors Technical Data, publication MMI-TD051.

Additional Changes

- QS 150 motors are not compatible with SYNC IT™ controllers. Systems that use Synchronization on QS 100 motors can continue to use SYNC-IT controllers with QS 100 motors. Other motors in the systems that are not under SYNC-IT control can be replaced with QS 150 motors.
- In addition to 1.0 m (1-meter) and 0.5 m (1/2-meter) motors, the QS 150 also has a 0.3 m motor option. This shorter motor size is used to create curves that have a smaller radius.
- Connector types are different and can require modifications to the mounting plate for installation.
- New firmware for QS 150, which supports both QS 150 motors and QS 100 motors operation. is available to download at rok.auto/pcdc.
- Node controller software must be updated to support the QS 150 motors (version 17.7.x or later), is available to download at rok.auto/pcdc.
- QS 150 motors have visual light-emitting diode (LED) status indicators.
- QS 150 motors require a separate logic and propulsion power, QS 100 motors can use one connection to feed logic and propulsion power.

Exposed Materials QuickStick 150	
Component	**Materials**
Cover Housing	PLENCO 08218

Exposed Materials QuickStick 100
Materials
Aluminum 6063-T6

QuickStick 150 Status Indicators

The QS 150 motors have three status indicators on the top cover. Table 1 provides descriptions of the QS 150 motor status indicators.

Figure 1 - Locations of Labels on the QuickStick 150 Motors

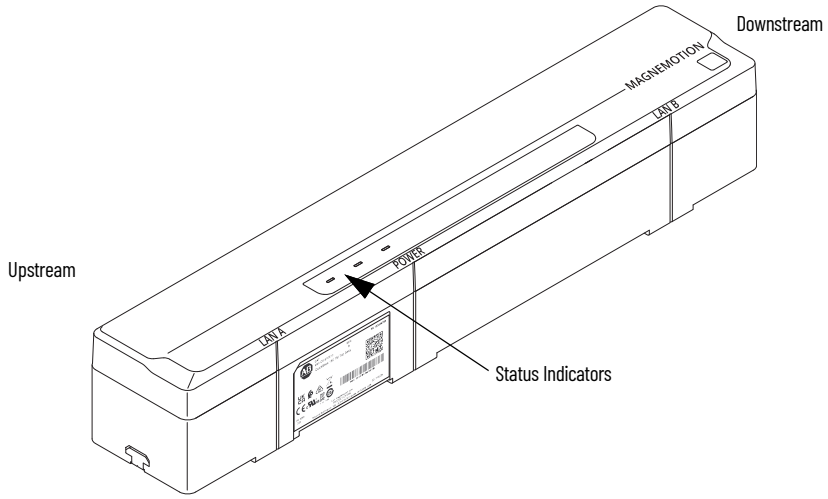


Table 1 - Motor Status Indicators

Condition	Power	Module	Network
Steady Off	There is no power that is applied to the motor module section.	There is no power that is applied to the motor module section.	There is no power that is applied to the motor module section or the IP address is not configured.
Steady Green	Motor is operational. No power faults or failures The motor has expected propulsion that is applied to the motor module section.	Motor is operational. No motor faults or failures.	Node controller connection is established and normal operation. IP address is configured.
Flashing Green	Propulsion power is not within acceptable limits. Example: Under voltage fault, soft start not complete.	Motor is in stand by mode. Example: Suspended / Fast stop by the NC.	Motor has not been provisioned with IP address.
Steady Yellow	The motor has triggered an under/over voltage warning.	Degraded performance Example: Motor stall is detected and/or Hall Effect Sensor Fault, under/over voltage warning.	—
Flashing Yellow	—	—	—
Steady Red	• Nonrecoverable power fault - fuse open. • Motor has Propulsion power but no Logic Power.	Major fault. The motor module section detected a nonrecoverable fault. Example: Latched faults including overcurrent, board comm fault, fuse fault.	Duplicate IP address. The IP address that is specified is already in use. Motor has Propulsion power but no Logic Power.
Flashing Red	Overvoltage fault.	Major recoverable fault. The motor module section detected a recoverable fault. Example: Over temp, over and under voltage fault.	Connection timeout. No connection to node controller.
Flashing Green/Yellow	—	—	—
Flashing Green/Red	—	The motor section is powering up and/or performing initiation tasks. Example: Programming, boot loader mode.	—
Flashing Yellow/Red	—	—	—
NET and MOD **Alternating** flashing red	Firmware update in progress. Do Not remove control power during this condition.		

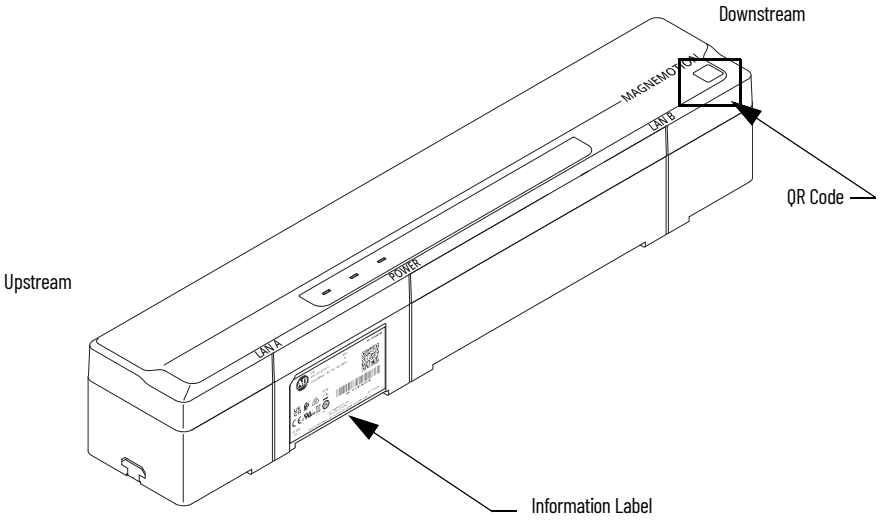
QuickStick Product Label

The product label for the QS 150 motors is on the side of the motor. It contains a link to the product webpage, the serial number of the motor, and a 1-dimensional barcode of the motor MAC address.

Table 2 - Example Labels Used on the QuickStick 150 Motors

	Product Information Label Location: On the side of the motor, see Figure 2

Figure 2 - Locations of Labels on the QuickStick 150 Motors



QuickStick QR Code

There is a QR Code on top of the QS 150 motors, which includes the MAC address of the motor, in case access to the product label on the side of the motor is limited. See Figure 2 for location.

Notes:

Design Considerations for QS 150 Motors

If migrating from a QS 100 motor to a QS 150 motor, all additional motors on the same path must be migrated to a QS 150 motor. There can be a mix of paths with one motor type on the same system but each path in that system must use either all QS 100 motors or all QS 150 motors on that path.

One QS 150 1.0 meter motor is used for each QS 100 1.0 meter motor and one QS 150 0.5 meter motor is used for each QS 100 0.5 meter motor (a one-to-one replacement in terms of motors).

- 1.0 m is the MMI-QS-S10E10
- 0.5 m is the MMI-QS-S10E05
- 0.3 m is the MMI-QS-S10E03

Propulsion Power

The QS 150 motors receive propulsion power from an external 72V DC power supply. There is a shared pigtail connector, which connects to a predesigned power cable system that carries both logic and propulsion power to the motors.

QS 150 motors can be run at 48V DC, but the thrust and velocity performance is similar to that of QS 100 motors. If you run QS 150 motors at 48V propulsion power, separate power supplies feeding the propulsion and logic power inputs is required.

If you do not already have a 72V DC power supply, one option would be to use two 1606-XLS480G 36V DC power supplies in series to get the required 72V DC.

Regenerative Voltage Considerations

The power supply that is used for QS 150 motors must be able to handle the regenerative voltage that is produced from vehicle braking. The output overvoltage protection of the power supply should be 83V DC or greater. This limit is the default overvoltage limit of the QS 150 motors. Consult a Rockwell Automation Technical Support representative at rok.auto/support to see if other limits are available.

If a power supply has a maximum rated output voltage of less than 83V DC is used, an appropriately sized diode must be used to help prevent regenerative power from reaching the power supply or the configurable overvoltage limit must be set before initiating vehicle motion.

If you use QS 100 and QS 150 motors on the same power bus, not having sufficient power dissipation capabilities in the QS 100 motors on the same power bus to handle the entire regenerated power can cause the QS 100 motors to experience overvoltage. In this case, a voltage clamp circuit or use of the configurable overvoltage limit on the QS 150 motors can be required.

See the MagneMotion® QuickStick® and QuickStick® HT™ Design Guide, publication MMI-RM001 for additional overvoltage information.

IMPORTANT	Damage can occur to a power supply if it is not rated for the overvoltage limit of the QS 150 motors or if the power supply is not protected by a diode.

Logic Power

The QS 150 motors receive logic power from an external 48V DC power supply. The external logic power is connected to the shared pigtail connector, which then connects to the power cable system.

Logic power can be shared between QS 100 motors and QS 150 motors since they both require 48V DC, as long as the power supply can support the total logic power draw from all connected motors.

The logic power draw is the same between QS 100 and QS 150 motors at 10 W.

ATTENTION: If you add new power supplies, make sure that they share a ground reference with the existing supplies.

Node Controllers

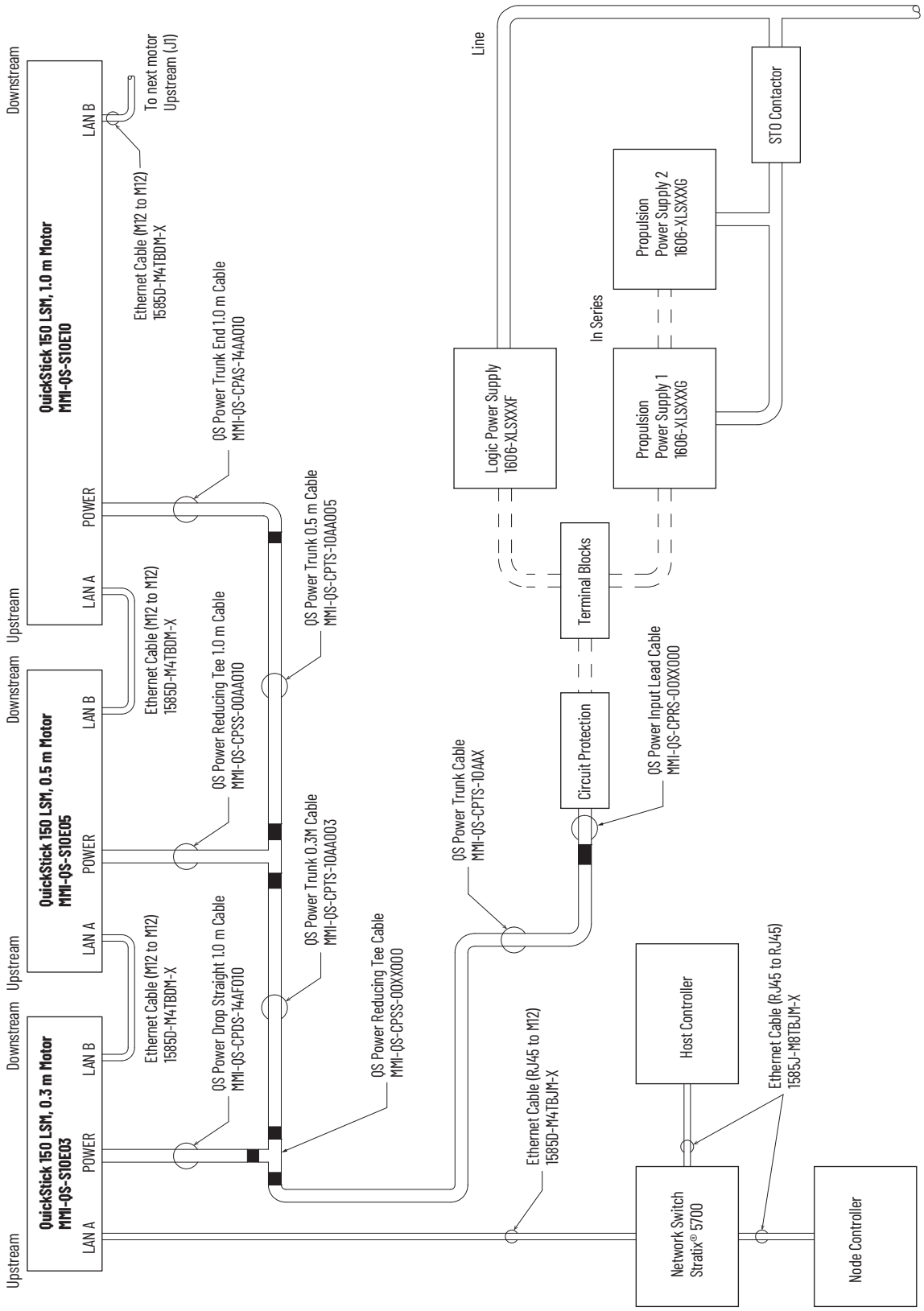
NC LITE, NC-12, and NC-S series-B node controllers can support both RS-422 serial connections to QS 100 motors and Ethernet Connections to the QS 150 motors. See Using Ethernet Communication in the Node Controller Hardware User Manual, publication MMI-UM013, for limits on node controller loading. In most cases, the existing node controller can be used to migrate to QS 150 motors.

If replacing node controllers, NC-E series-B node controllers are recommended for Ethernet only configurations (all motors that are connected to that node controller have been migrated to QS 150 motors) and NC-S node controllers are recommended for hybrid configurations.

IMPORTANT The same motor type must be used for each path, however, the node controllers can support a mix of QS 100 motor paths and QS 150 motor paths.

Integrated Cabling System

The QS 150 is supported by a new predesigned power cabling system removing the need for customer designed power buses and junction boxes.


Downstream
Upstream
QuickStick 150 LSM, 1.0 m Motor
MMI-QS-S10E10
LAN A
POWER
LAN B
To next motor
Upstream (J1)
Ethernet Cable (M12 to M12)
1585D-M4TBDM-X
QS Power Trunk End 1.0 m Cable
MMI-QS-CPAS-14AA010
QuickStick 150 LSM, 0.5 m Motor
MMI-QS-S10E05
QS Power Trunk 0.5 m Cable
MMI-QS-CPTS-10AA005
QS Power Reducing Tee 1.0 m Cable
MMI-QS-CPSS-00AA010
QS Power Trunk 0.3M Cable
MMI-QS-CPTS-10AA003
QS Power Drop Straight 1.0 m Cable
MMI-QS-CPDS-14AF010
QS Power Reducing Tee Cable
MMI-QS-CPSS-00XX000
QuickStick 150 LSM, 0.3 m Motor
MMI-QS-S10E03
Line
STO Contactor
Propulsion
Power Supply 2
1606-XLSXXXG
In Series
Propulsion
Power Supply 1
1606-XLSXXXG
Logic Power Supply
1606-XLSXXXF
Terminal Blocks
Circuit Protection
QS Power Input Lead Cable
MMI-QS-CPRS-00XX000
QS Power Trunk Cable
MMI-QS-CPTS-10AAX
Host Controller
Ethernet Cable (RJ45 to RJ45)
1585J-M8TBJM-X
Ethernet Cable (RJ45 to M12)
1585D-M4TBJM-X
Network Switch
Stratix® 5700
Node Controller

Notes:

Installation Considerations

Mounting

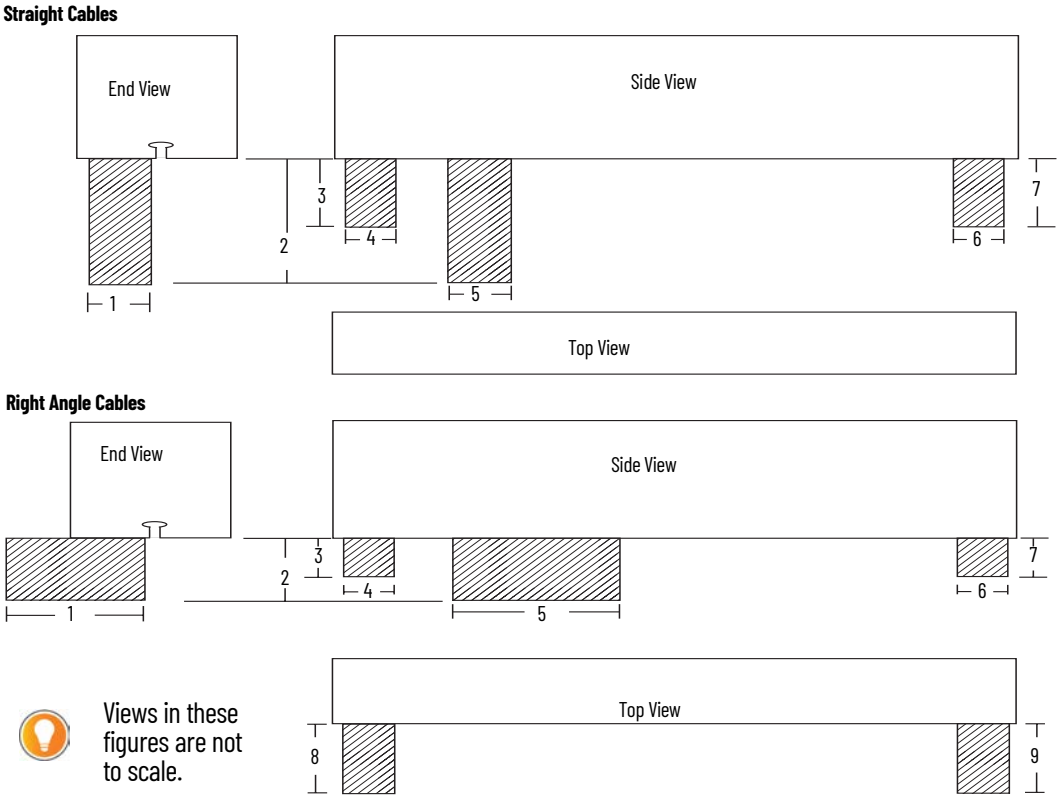
QS 150 motors are dimensionally the same as QS 100 motors, except for the connectors and connector housing. Connectors are no longer recessed into the motor; they are instead protruding from the motor. See Figure 3.

For all mechanical information, dimensions, clearances, mounting orientations, and environmental specs for the QS 100 and QS 150, the QuickStick® Motors Technical Data, publication MMI-TD051.

Clearances for QS 150 motor connectors can require modifications to mounting hardware. Dimensions for motor connectors are included in the QuickStick Motors Technical Data, publication MMI-TD051.

Figure 3 - QuickStick 150 Cable Connector Mounting Clearance

Item	Dimension mm (in.)
Straight Cables	
1	31.8 (1.3)
2	203.2 (8.0)
3	88.9 (3.5)
4	25.4 (1.0)
5	31.8 (1.3)
6	88.9 (3.5)
7	25.4 (1.0)
Right Angle Cables	
1	88.9 (3.5)
2	57.2 (2.3)
3	38.1 (1.5)
4	25.4 (1.0)
5	203.2 (8.0)
6	25.4 (1.0)
7	38.1 (1.5)
8	63.5 (2.5)
9	63.5 (2.5)



Mount the 72V DC Power Supply

Mount the external 72V DC power supplies as close to the QS 150 motors as possible to minimize voltage drop on the power cable system. For available cables and specifications, the QuickStick Motors Technical Data, publication MMI-TD051. For power bus design recommendations, see the MagneMotion® QuickStick and QuickStick® HT™ Design Guide, publication MMI-RM001.

See the installation instructions that are provided with your hardware for additional information.

Mount the 48V DC Power Supply

Mount the external 48V DC power supplies as close to the QS 150 motors as possible to minimize voltage drop on the power cable system. For available cables and specifications, see the QuickStick Motors Technical Data, publication MMI-TD051. For power bus design recommendations, see the MagneMotion QuickStick and QuickStick HT Design Guide, publication MMI-RM001.

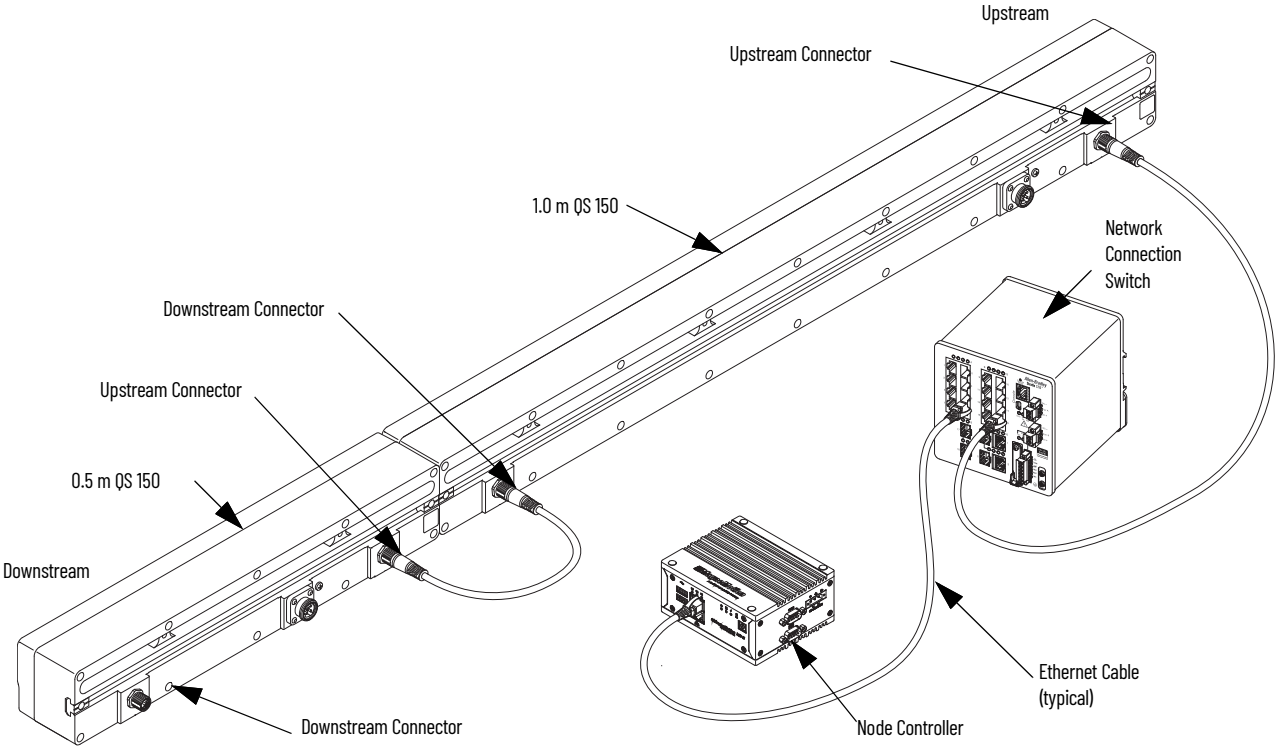
See the installation instructions that is provided with your hardware for additional information.

Mount Network Switches

If additional network switches are required for the migration process, locate the network switches close to the node controllers they are responsible for (those switches that are connected to the QS 100 motors being migrated to QS 150 motors) to minimize the length of all wiring.

See the network switch user documentation for mounting information, making sure that any service and exclusion zones are maintained. If you do not have a network switch, Stratix® 5700 industrial managed Ethernet switches are recommended. For available cables and specifications, see the QuickStick Motors Technical Data, publication MMI-TD051. See the MagneMotion QuickStick and QuickStick HT Design Guide, publication MMI-RM001 for how to configure your managed switch.

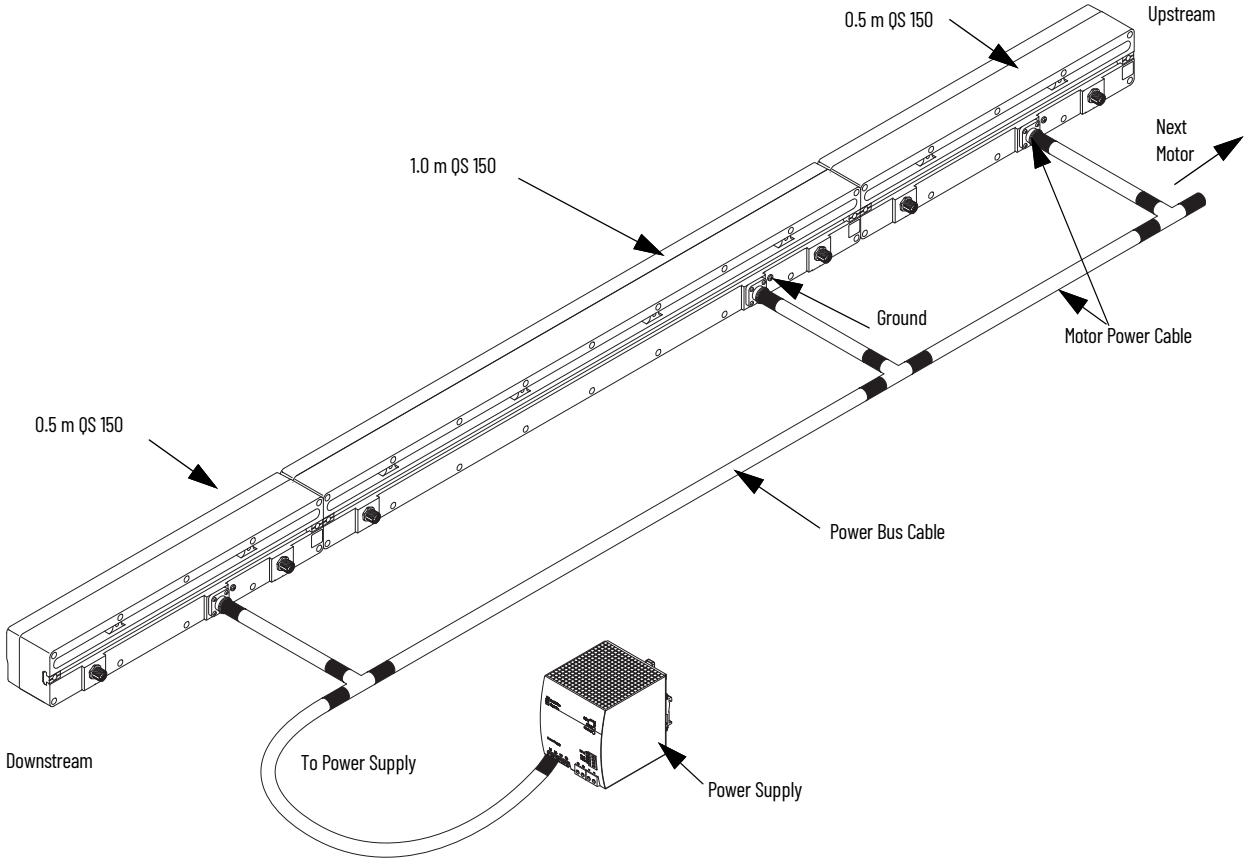
Figure 4 - Ethernet Communication Connections for QuickStick 150



Connect Power

QS 150 uses a new integrated power cabling system. In most applications, this cabling system replaces the existing network of pigtails, junction boxes, and custom-integrated power buses that supported the QS 100. Instead, one power bus is run by using the power cable system that is run from the cabinet. If a solution to run a cable from a junction box is desired, you can create pigtails by using the cabinet pigtail and the end of line cable.

Figure 5 - Power Connections: Two or more Motors in a Chain

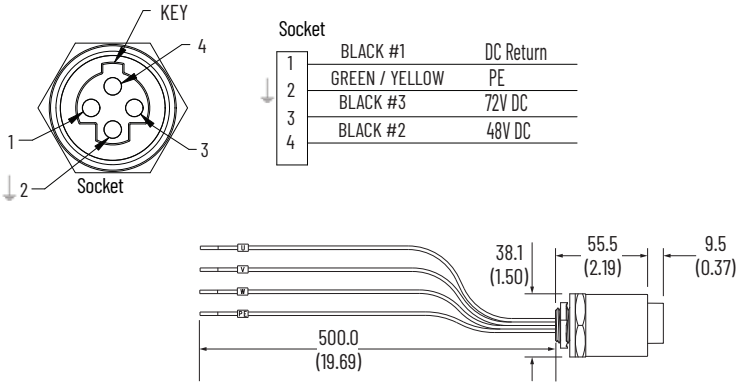


Cabinet Power Cable Pigtail - Logic and Propulsion Power

The power cable system uses one pigtail connector for both logic and propulsion power.

Figure 6 - Power Trunk Cables

(MMI-QS-CPRS-00XX000)



Environmental	
Enclosure Rating (1)	IP66/IP67
Operating Temperature	UL Type TC 600V 90 °C (194 °F) dry, 75 °C (167 °F) wet, exposed run (ER) or MTW 600V 90 °C (194 °F) or STOOW 105 °C (221 °F) 600V - CSA STOOW 600V FT2

(1) To maintain IP66/IP67 ratings, tighten cable collars to 1.24 N•m (11 lb•in).

We recommend that you run the pigtail connector from the same cabinet as the 48V DC logic and 72V DC propulsion power supply. From there, use the rest of the power cable system connectors/cables to connect to the QS 150 motors.

Power Cable System

The power cable system uses a series of trunk cables and T-connectors/drop cables to connect power to multiple QS 150 motors. For available cables and specifications, see the QuickStick Motors Technical Data, publication MMI-TD051.

Figure 7 - Cable Bend Radius

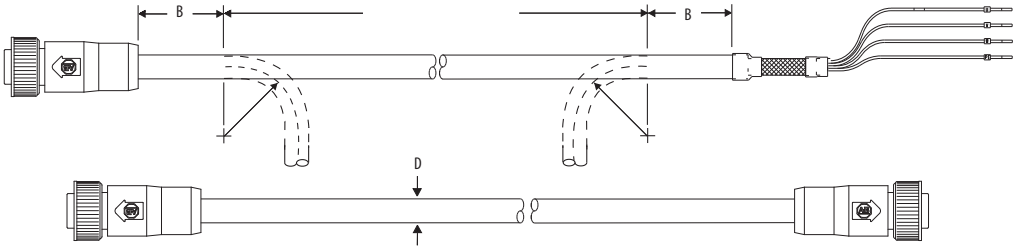


Table 3 - Cable Bend Radius

Cable Cat. No.	Wire Size	D mm (in.)	B mm (in.)	Static (installation) Bend Radius mm (in.)	Continuous Bend Radius mm (in.)	Expected Flex Cycle at Rated Radius
MMI-QS-CPSS-00XX000 (1)	10 AWG trunk 14 AWG drop	–	–	–	–	–
MMI-QS-CPSS-00AA*xxx*	10 AWG trunk 14 AWG drop	10.2 (0.4)	50.8 (2.0)	10.2 (0.4)	–	–
MMI-QS-CPDS-14AF*xxx*	14 AWG	10.2 (0.4)	50.8 (2.0)	101.6 (4.0)	101.6 (4.0)	10 million
MMI-QS-CPDR-14AF*xxx*	14 AWG	10.2 (0.4)	50.8 (2.0)	101.6 (4.0)	101.6 (4.0)	10 million
MMI-QS-CPCS-00XX000	–	–	–	–	–	–
MMI-QS-CPAS-14AA*xxx*	10 AWG	13.5 (0.5)	50.8 (2.0)	134.6 (5.3)	–	–
MMI-QS-CPTS-10AA*xxx*	10 AWG	13.5 (0.5)	50.8 (2.0)	134.6 (5.3)	–	–
MMI-QS-CPRS-00XX000	10 AWG	4.6 (0.2)	25.4 (1.0)	45.7 (1.8)	–	–

(1) This catalog number is only a tee, there is no cable that is attached.

Trunk cables are 10 AWG and drop cables are 14 AWG. There is additionally an end of line cable (the M35 to M24 trunk adapter), which can be used for the last connected motor.

Verify voltage drop across trunk cables to confirm sufficient propulsion and logic voltage are supplied by external power supplies.

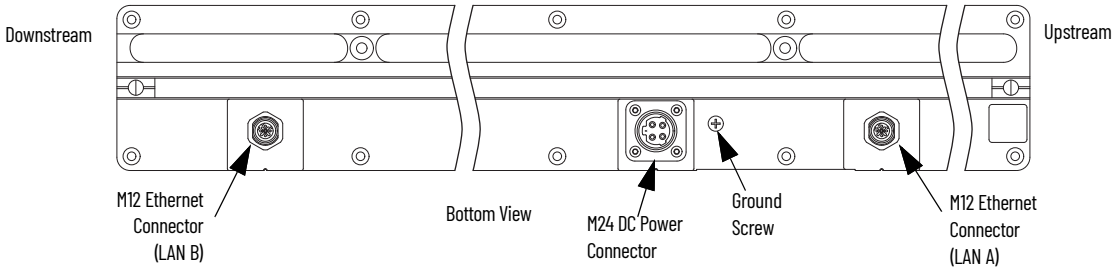
Drop cables connect to the power connector on the QS 150 motors, which is the center M24 connector on the bottom of the motor.

Ground the System

Proper grounding of the QS 150 transport system is required to make sure of proper operation and to minimize electrical safety issues. Use the ground pinout connection on the power cable system pigtail connector.

There is additionally a ground screw that is located on the bottom of the QS 150 motors, right next to the power cable connector. This ground screw is a redundant grounding location for the QS 150 motors, which you can use in addition to the power cable ground connection.

Figure 8 - Motor Electrical Connections



Network Connections

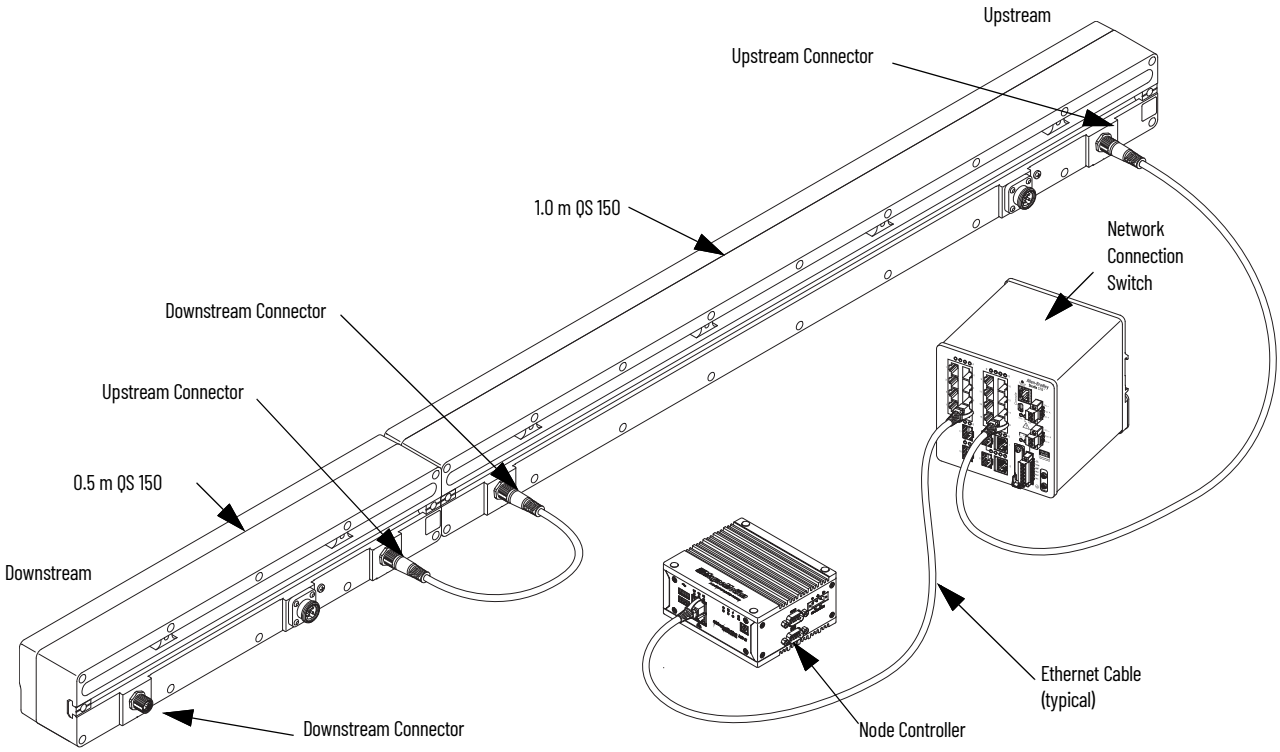
The QS 150 motors use Ethernet M12 connectors to connect to other motors and to the node controller instead of the RS-422 connections that the QS 100 motors use to for motor communication.

The QS 150 motors can use different network connection schemes depending on the application. When using Ethernet communication, all motors within a system must be able to communicate with each other and with all node controllers.

There must be sufficient open ports on the local network switches to support all node controllers and each chain of motors. It is recommended to use a managed switch to configure the QS 150 motors on a separate VLAN than the rest of the network, or to use a separate dedicated network/network switch. The number of network ports/switches depends on the number and configuration of motors that you are migrating to QS 150 motor, and the limits on the number of motors that can be daisy chained together.

QS 150 motors have an M12 connector for upstream and downstream Ethernet network connections.

Figure 9 - Ethernet Network Connections



It is best practice to mount the motors so that the upstream to downstream direction of the motor goes in the logical forward direction of travel for the system. Motors on the same Ethernet chain must be connected upstream to downstream or downstream to upstream. Keep the logical forward direction of travel consistent throughout the system.

The maximum number of QS 150 motors in one Ethernet network chain is limited to 25. For Ethernet cable information, see the QuickStick Motors Technical Data, publication MMI-TD051. For communication system design and configuration, see the MagneMotion QuickStick and QuickStick HT Design Guide, publication MMI-RM001.

Node Controller - Ethernet Only

If replacing all QS 100 motors on a node controller with QS 150 motors, see Ethernet Only Motor Connections in the Node Controller Hardware User Manual, publication MMI-UM013 for installation instructions and an example of a typical Ethernet daisy-chain.

Node Controller - RS-422 and Ethernet

If only migrating some of the motors that are connected to a node controller (for example, replacing one path of QS 100 motors with QS 150 motors), see RS-422 and Ethernet Motor Connections in the Node Controller Hardware User Manual, publication MMI-UM013 for installation instructions and a motor wiring example.

Software Configuration

Use the following firmware/software files as the minimum compatible version for a system migrating to QuickStick® 150 motors. Files for version 17.7.*x* or later are available for download from rok.auto/pcdc.

Table 4 - Minimum Compatible Software and Configuration Files

Folder	File	File Name	Version
Node Controller	Controller Image	controller_image_malibu_17.7.3_10-Feb-2023_1558	17.7.3 or later
QuickStick 150 Motor ERF	Motor ERF Image - QuickStick 150 Master	QS150_Master_runtime_md5.erf	17.7.7 or later
	Motor ERF Image - QuickStick 150 Slave	QS150_Slave_runtime_md5.erf	17.7.7 or later
	Motor ERF Image - QuickStick 150 CPU2	QS150_CPU2_runtime_md5.erf	17.7.7 or later
QuickStick 100 Motor ERF(1)	Motor ERF Image - QuickStick 100 Master	QS100A_Master_runtime_md5.erf	15.3.5 or later
	Motor ERF Image - QuickStick 100 Slave1	QS100A_Slave_runtime_md5.erf	15.3.5 or later
Motor Type Files	Type file - QuickStick 150 Motors	QS_150_motor_type.xml	32846 or later
	Type file - QuickStick 100 Motors1	QS_Gen2_100_motor_type.xml	32096 or later
	Type file - QuickStick 100 Magnet Array(2)	QS_100_magnet_array_type.xml	26595 or later
NCHost TCP Interface Utility	NC Host TCP Utility for Windows®	NCHostSetup_V15.0.5.msi	15.0.5 or later
MagneMotion® Configuration	Configuration Utility for Windows	MMConfigToolSetupQS.msi	15.0.6 or later

(1) QuickStick 100 Motor ERF Files and QuickStick 100 Type Files are only required if the system contains a mix of QS 100 and QS 150 motors. They are not needed if the system is composed of entirely QS 150 motors.
(2) The QuickStick 100 Magnet Array Type File is compatible with both QS 100 and QS 150 magnet arrays and is required even if the system is composed of entirely QS 150 motors.

Node Controller Image and Firmware

The QS 150 motors require a minimum firmware revision running on the node controller. All node controllers in a system that use QS 150 motors must be updated to the minimum firmware revision as part of the migration.

The node controller software image version must be version 17.7.*x* or later. To check what current version that you are running and to update your version, refer to the Changing Node Controller Software Image Files section of the MagneMotion Node Controller Interface User Manual, publication MMI-UM001.

Update Type Files

Type Files are XML files that contain basic information about the specific QuickStick 150 motors, QuickStick 100 motors, and magnet array types being used. See Table 4 Minimum Compatible Software and Configuration Files for the appropriate minimum revision of each type file to use in a system being migrated to QS 150 motors.

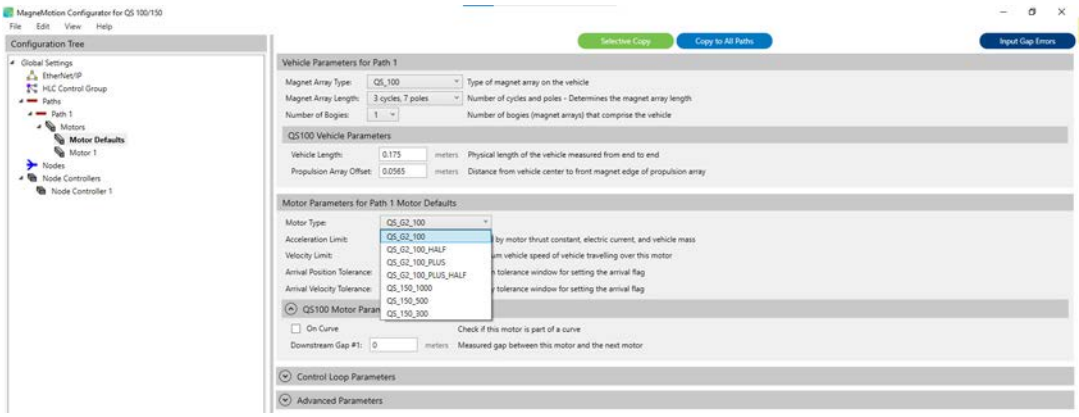
Update the motor and magnet array Type Files for all node controllers in the system. For instructions on how to check and update the type files on each node controller, see the Motor Type Files section and the Magnet Array Type Files section of the Node Controller Interface User Manual, publication MMI-UM001.

Update the Node Controller Configuration File

The node controller configuration file can be edited with the QuickStick Configurator, see MagneMotion System Configurator User Manual, MMI-UM046 for more information. After updates are complete, the node controller configuration file must then be uploaded to each node controller in the transport system before using the system. For details see the Node Controller Interface User Manual, publication MMI-UM001.

Change Motor Type to QS 150

For each motor in the system that is migrating from QS 100 motors to QS 150 motors, make sure to change the motor type in the Configuration file to 'QS_150_<1000/500/300 >'.

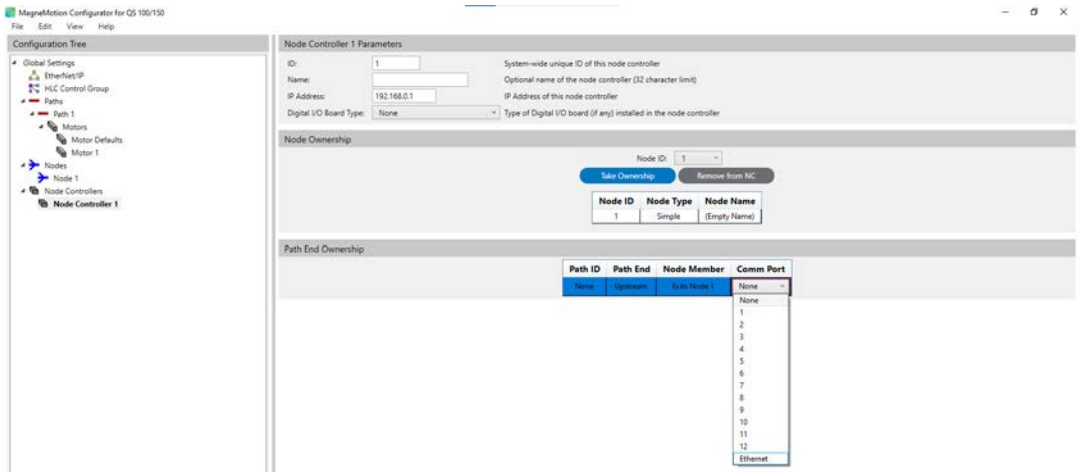


Add Nodes

When migrating a path to use QS 150 motors, nodes (such as Relay Nodes) are needed at the junction of RS-422 and Ethernet paths to make the transition between motor types.

Configure Communication Ports

Communication ports for node controllers that use QS 150 motors must be configured to 'Ethernet' instead of a numerical value.



Create the MICS File

All motors migrated to QS 150 motors must be configured in a MagneMotion Information and Configuration Service (MICS) file. It is an XML file that is used to describe the interfaces and physical hardware connections to the motors. For more information, see the Ethernet Motor MICS File section in the MagneMotion QuickStick and QuickStick® HT™ Design Guide, publication MMI-RM001. The Ethernet Motor Commissioning Tool provides a graphical interface to create or modify the elements of the MICS file.

Once it has been saved, upload the MICS file to all node controllers (for details, see the Node Controller Interface User Manual, publication MMI-UM001) then cycle logic power to the motors to force the motors to request their network provisioning.

Motor ERF Image Files

Motors must be programmed by using the appropriate motor ERF image file.

Follow the procedures in the Programming Motors section of the MagneMotion QuickStick 100 User Manual, publication MMI-UM006, QuickStick 150 User Manual, publication MMI-UM047, and reference the Node Controller Interface User Manual, publication MMI-UM001 for additional information.

Curve Correction Tables

Curve applications that use QS 150 motors can require a curve correction table that is used to compensate for misalignment between coils and sensors as a vehicle traverses a curve. To determine if your application requires a curve correction table, see the MagneMotion QuickStick and QuickStick HT Design Guide, publication MMI-RM001.

If your application does require a curve correction table, see the QuickStick Motors Curve Design and Validation section of the MagneMotion QuickStick and QuickStick HT Design Guide, publication MMI-RM001, for instructions on how to collect look-up table data, obtain the curve correction table file, and upload the file to the system.

Fault Feedback Changes

For details of all safety faults and user actions for QS 150 motors, see theMagneMotion QuickStick 100 User Manual, publication MMI-UM006 or the QuickStick 150 User Manual, publication MMI-UM047.

Fault Feedback - Ethernet/IP

Motor and driver status is returned through the 'MMI_path_qs_faults_status' tag over an EtherNet/IP™ network. The QS 150 motors add additional tags to 'MMI_path_qs_faults_status' for faults and status information. Update the user-defined tag (UDT) that is used in Studio 5000 Logix Designer® applications for fault feedback to incorporate these additional QS 150 motor tags. Information and tag descriptions can be found in the communication protocol manual, MagneMotion Host Controller EtherNet/IP Communication Protocol User Manual, publication MMI-UM004.

Fault Feedback - TCP/IP

If you use TCP/IP to obtain fault data, note that the message type changes. Reference the Information and tag descriptions that are found in the communication protocol manual, MagneMotion Host Controller TCP/IP Communication Protocol User Manual, publication MMI-UM003.

Notes:

Notes:

Rockwell Automation Support

Use these resources to access support information.

Technical Support Center	Find help with how-to videos, FAQs, chat, user forums, Knowledgebase, and product notification updates.	rok.auto/support
Local Technical Support Phone Numbers	Locate the telephone number for your country.	rok.auto/phonesupport
Technical Documentation Center	Quickly access and download technical specifications, installation instructions, and user manuals.	rok.auto/techdocs
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

Documentation Feedback

Your comments help us serve your documentation needs better. If you have any suggestions on how to improve our content, complete the form at rok.auto/docfeedback.

Waste Electrical and Electronic Equipment (WEEE)

At the end of life, this equipment should be collected separately from any unsorted municipal waste.

Rockwell Automation maintains current product environmental compliance information on its website at rok.auto/pec.

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