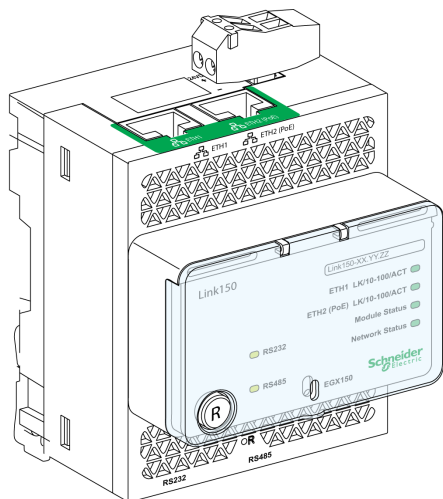


Ethernet Gateway Link150

User Guide

12/2019



The information provided in this documentation contains general descriptions and/or technical characteristics of the performance of the products contained herein. This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use thereof. Neither Schneider Electric nor any of its affiliates or subsidiaries shall be responsible or liable for misuse of the information contained herein. If you have any suggestions for improvements or amendments or have found errors in this publication, please notify us.

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All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Failure to use Schneider Electric software or approved software with our hardware products may result in injury, harm, or improper operating results.

Failure to observe this information can result in injury or equipment damage.

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Important Information

NOTICE

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

PLEASE NOTE

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

CYBERSECURITY SAFETY NOTICE

WARNING

POTENTIAL COMPROMISE OF SYSTEM AVAILABILITY, INTEGRITY, AND CONFIDENTIALITY

- Change default passwords at first use to help prevent unauthorized access to device settings, controls, and information.
- Disable unused ports/services and default accounts to help minimize pathways for malicious attackers.
- Place networked devices behind multiple layers of cyber defenses (such as firewalls, network segmentation, and network intrusion detection and protection).
- Use cybersecurity best practices (for example, least privilege, separation of duties) to help prevent unauthorized exposure, loss, modification of data and logs, or interruption of services.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

FCC Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designated to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at this own expense.

About the Book



At a Glance

Document Scope

The aim of this document is to provide the users, installers, and maintenance personnel with the technical information and procedures needed to access and maintain the Link150 web server.

Validity Note

The technical characteristics of the devices described in the present document also appear online. To access the information online:

Step	Action
1	Go to the Schneider Electric home page www.schneider-electric.com .
2	In the Search box type the reference of a product or the name of a product range. - Do not include blank spaces in the reference or product range. - To get information on grouping similar modules, use asterisks (*).
3	If you entered a reference, go to the Product Datasheets search results and click on the reference that interests you. If you entered the name of a product range, go to the Product Ranges search results and click on the product range that interests you.
4	If more than one reference appears in the Products search results, click on the reference that interests you.
5	Depending on the size of your screen, you may need to scroll down to see the datasheet.
6	To save or print a datasheet as a .pdf file, click Download XXX product datasheet .

The characteristics that are described in the present document should be the same as those characteristics that appear online. In line with our policy of constant improvement, we may revise content over time to improve clarity and accuracy. If you see a difference between the document and online information, use the online information as your reference.

Related Documents

Title of Documentation	Reference Number
TSXETG100 ConneXium Ethernet Gateway User Guide	63230-319-225 (EN, ES, FR, DE)
EGX100 Ethernet Gateway User Guide	63230-319-204 (EN, ES, FR, DE, ZH)
Ethernet Gateway Link150 Instruction Sheet	NHA50221

You can download these technical publications and other technical information from our website at <https://www.se.com/ww/en/download/>.

Chapter 1

Link150 Presentation

What Is in This Chapter?

This chapter contains the following topics:

Topic	Page
Ethernet Gateway Link150 Description	10
Hardware Description	11
Ethernet Gateway Link150 Characteristics	18
Ethernet Gateway Link150 Firmware Update	19
Schneider Electric Green Premium™ Ecolabel	23

Ethernet Gateway Link150 Description

Introduction

This manual is to be used with Ethernet Gateway Link150. For installation information, see the *Ethernet Gateway Link150 Instruction Sheet*.

Ethernet Gateway Link150 is a communication device that provides connectivity between Ethernet (Modbus TCP/IP) and Modbus serial line devices, allowing Modbus TCP/IP clients to access information from serial slave devices. It also allows serial master devices to access information from slave devices distributed across an Ethernet network.

Ethernet Gateway Link150 Features

The Ethernet Gateway Link150 supports the following Ethernet protocols:

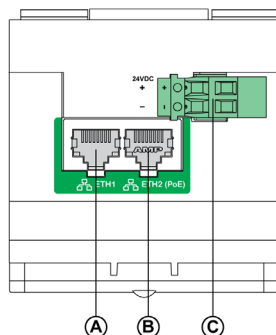
- **Modbus TCP/IP:** Modbus TCP/IP is a protocol, which provides master/slave communication between devices and TCP/IP that provides communications over an Ethernet connection. Modbus TCP/IP is used to exchange data between Ethernet Gateway Link150 and other compatible Modbus TCP/IP devices through TCP port 502.
- **Hypertext Transfer Protocol (HTTP):** HTTP is a network protocol that handles delivery of files and data on the World Wide Web. It provides web server functionality through TCP port 80. Remote configuration of Ethernet Gateway Link150 and viewing of diagnostic data is possible using a web browser.
- **Hypertext Transfer Protocol Secure (HTTPS):** HTTPS is a variant of the standard web transfer protocol (HTTP) that adds a layer of security on the data in transit through a Secure Socket Layer (SSL) or Transport Layer Security (TLS) protocol connection. HTTPS enables encrypted communication and secure connection between a remote user and the Link150 device.
- **File Transfer Protocol (FTP):** FTP is a network protocol that provides the ability to transfer files over the Internet from one computer to another. FTP is used to transfer firmware updates to Ethernet Gateway Link150 through TCP port 21.
- **Simple Network Management Protocol (SNMP):** Based on MIB2 format, SNMP provides the ability to store and send identifying and diagnostic information used for network management purposes through UDP port 161.
- **Address Resolution Protocol (ARP):** ARP is used to convert IP addresses to Ethernet addresses. ARP requests are sent by Ethernet Gateway Link150 to determine if its address is a duplicate IP address.
- **Rapid Spanning Tree Protocol (RSTP):** RSTP is the advanced version of Spanning Tree Protocol, is a link layer protocol executed within bridges or switches.
- **Devices Profile for Web Services (DPWS):** DPWS defines a minimal set of implementation constraints to enable secure web service messaging, discovery, description, and eventing on resource-constrained devices.

NOTE:

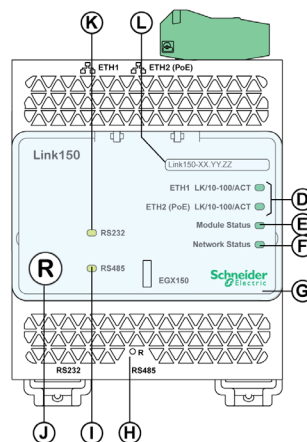
- HTTPS and RSTP protocols are applicable only from Link150 firmware version 5.1.15.
- FTP protocol is applicable only up to Link150 firmware version 5.0.29.

Hardware Description

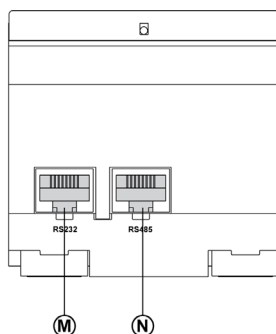
Top View



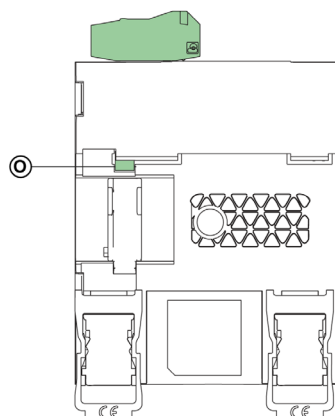
Front View



Bottom View



Rear View

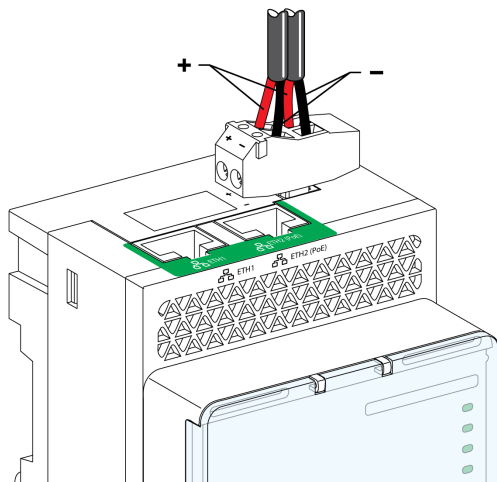


- A** ETH1: Ethernet 1 communication port
- B** ETH2: Ethernet 2 (Power over Ethernet) communication port
- C** 24 Vdc power supply terminal block
- D** Ethernet communication LEDs
- E** Module status LED
- F** Network status LED
- G** Sealable transparent cover
- H** IP reset pin
- I** RS485 traffic status LED
- J** Device soft restart button (Accessible through closed cover)
- K** RS232 traffic status LED
- L** Device name label
- M** RS232 port
- N** RS485 port
- O** Grounding connection

24 Vdc Power Supply Terminal Block

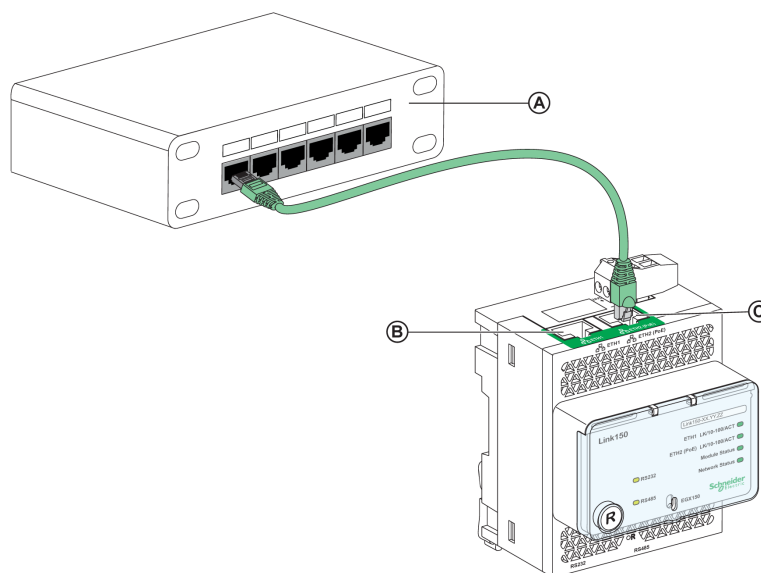
Ethernet Gateway Link150 is powered by 24 Vdc or Power-over-Ethernet (PoE). We recommend a UL listed and UL recognized limited voltage/limited current or a Class 2 power supply with a 24 Vdc, 500 mA minimum.

NOTE: When the module is connected with both PoE and 24 Vdc and if 24 Vdc is removed, there is a temporary communication loss until the device gets power from PoE.
For 24 Vdc power supply connection, use copper conductor only.



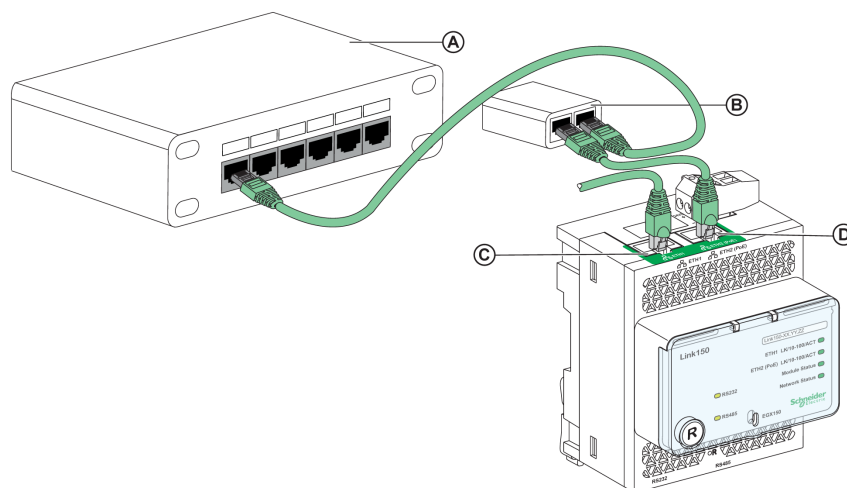
7 mm 0.27 in	0.2-1.5 mm ² 24-16 AWG	0.8 N•m 7 lb-in	≤ 3 mm ≤ 0.12 in

Ethernet Switch with Endspan PoE Ports



- A: Ethernet switch with Endspan PoE ports
- B: Ethernet 1 communication port
- C: Ethernet 2 (PoE) communication port

Ethernet Switch with Midspan PoE Ports



- A: Ethernet switch
 B: Midspan PoE injector
 C: Ethernet 1 communication port
 D: Ethernet 2 (PoE) communication port

Ethernet Communication LEDs

Ethernet dual color LEDs indicates the communication status of Ethernet ports ETH1 and ETH2.

LED indication	Status indication
Yellow	10 Mbps link
Yellow blink	10 Mbps activity
Green	100 Mbps link
Green blink	100 Mbps activity

Module Status LED

Module status dual color LED indicates the module status of Ethernet Gateway Link150.

LED indication	Status indication
Steady off	No power
Steady green	Device operational
Steady red	Out of service
Flashing green (500 ms ON, 500 ms OFF)	Firmware corrupted
Flashing red	Degraded mode
Flashing green/red (250 ms green, 250 ms red)	Self-test

NOTE:

- If the IP reset pin is released after 5 seconds and before 10 seconds, the module status LED flashes green till the IP reset pin is released.
- If the IP reset pin is released after 15 seconds, the module status LED turns to steady green.

Network Status LED

Network status dual color LED indicates the network status of Ethernet Gateway Link150.

LED indication	Status indication
Off	No power or no IP address
Steady green	Valid IP address
Steady red	Duplicated IP address
Blinking green/red (250 ms green, 250 ms red)	Self test in progress
Steady amber	Error in IP configuration or default IP address

RS232 Traffic LED

RS232 serial line traffic yellow LED indicates that the traffic is being transmitted or received over RS232 serial line network through the Ethernet Gateway Link150. The LED blinks during the transmission and reception of the messages. Otherwise, the LED is OFF.

RS485 Traffic LED

RS485 serial line traffic yellow LED indicates that the traffic is being transmitted or received over RS485 serial line network through the Ethernet gateway Link150. The LED blinks during the transmission and reception of the messages. Otherwise, the LED is OFF.

IP Reset Pin

When the IP reset pin is pressed for 1 to 5 seconds, the IP acquisition mode is reset to the factory default (DHCP).

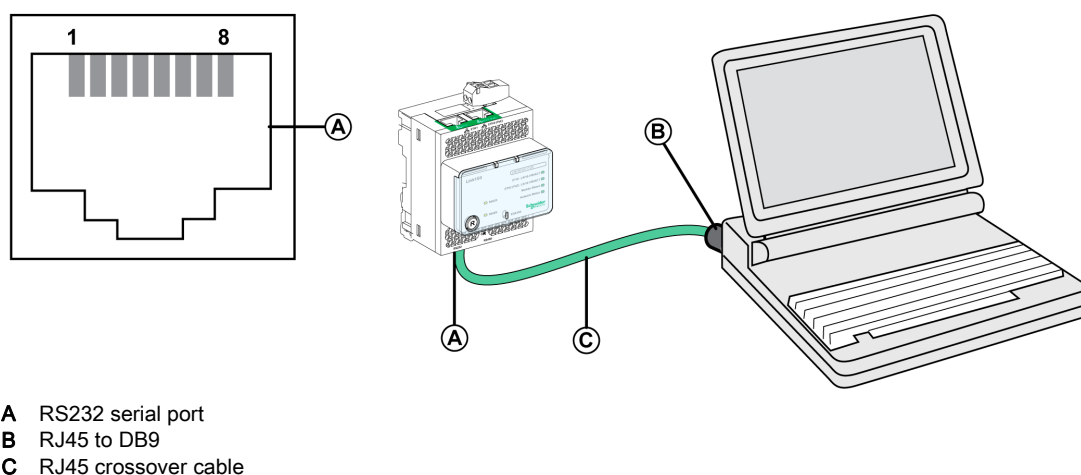
Factory Reset

When the IP reset pin is pressed for 10 to 15 seconds, all user-configurable information is reset to factory defaults.

Device Soft Restart Button

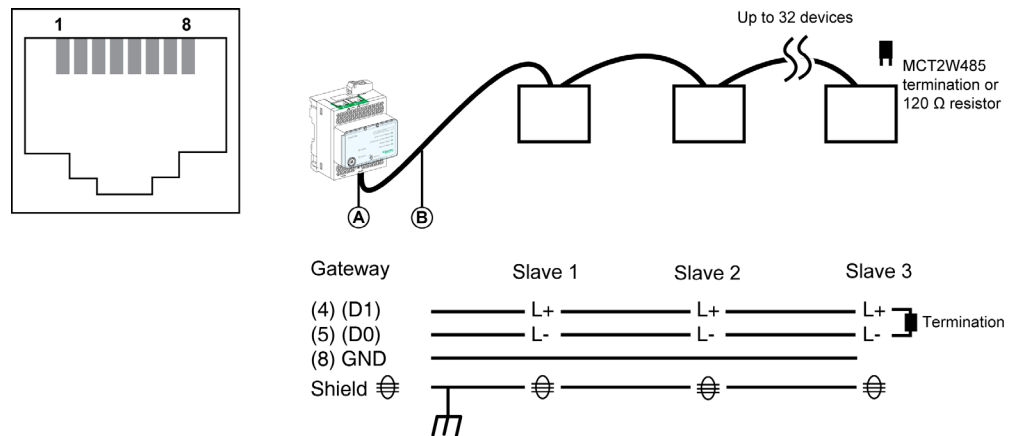
Press the device soft restart button for 10 to 15 seconds to soft restart the Link150. For more details refer to troubleshooting ([see page 95](#)) section.

RS232 Connection Diagram



Pin Number	Signal Name	Description
1	DSR	Data Set Ready
2	DCD	Data Carrier Detect
3	DTR	Data Terminal Ready
4	GND	Ground
5	RX	Receive Data
6	TX	Transmit Data
7	CTS	Clear to Send
8	RTS	Request to Send

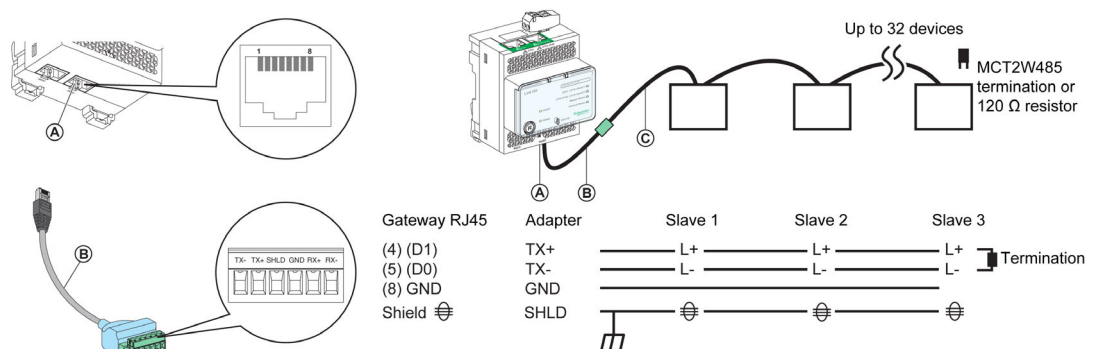
RS485 2-Wire Connection Diagram



- A** RS485 serial port
B RJ45 cable (VW3A8306D30 is an accessory for RJ45 connection)

Pin Number	Signal Name	Description
1	D1	Data+
2	D0	Data-
3	NC	No Connection
4	D1	Data+
5	D0	Data-
6	NC	No Connection
7	NC	No Connection
8	GND	Ground
	Shield	Shield

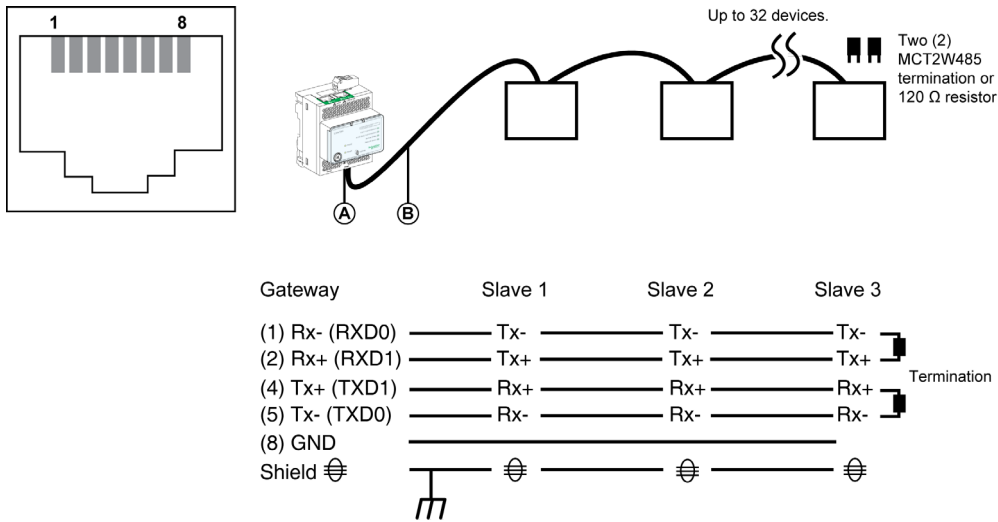
RS485 2-Wire with Link150 Cable Adapter Connection Diagram



- A** RS485 serial port
B Link150 cable adapter (PH68385 is an accessory for RJ45 connection)
C Belden 9841

Pin Number for Gateway RJ45 and Adapter	Signal Name	Description
1	D1	Data+
2	D0	Data-
3	NC	No Connection
4	D1	Data+
5	D0	Data-
6	NC	No Connection
7	NC	No Connection
8	GND	Ground
	Shield	Shield

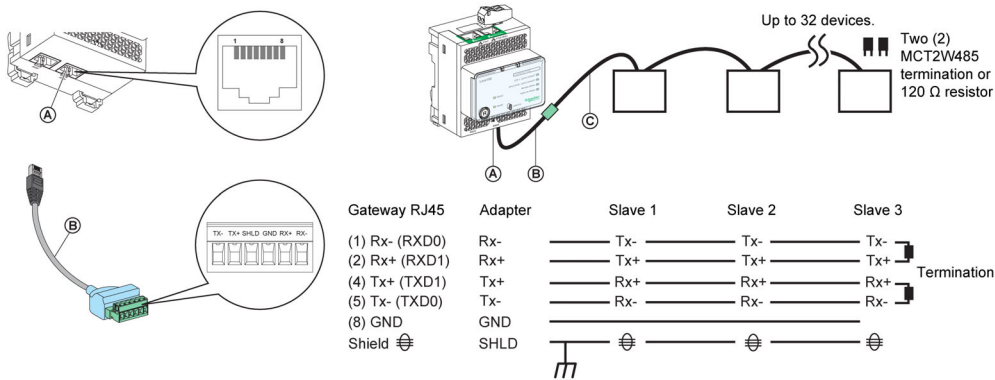
RS485 4-Wire Connection Diagram



- A RS485 serial port
B RJ45 cable (VW3A8306D30 is an accessory for RJ45 connection)

Pin Number	Signal Name	Description
1	RX-	Receive Data-
2	RX+	Receive Data+
3	NC	No Connection
4	TX+	Transmit Data+
5	TX-	Transmit Data-
6	NC	No Connection
7	NC	No Connection
8	GND	Ground
	Shield	Shield

RS485 4-Wire with Link150 Cable Adapter Connection Diagram



- A RS485 serial port
B Link150 cable adapter (PH68385 is an accessory for RJ45 connection)
C Belden 8723 or 9842

Pin Number for Gateway RJ45 and Adapter	Signal Name	Description
1	RX-	Receive Data-
2	RX+	Receive Data+
3	NC	No Connection
4	TX+	Transmit Data+
5	TX-	Transmit Data-
6	NC	No Connection
7	NC	No Connection
8	GND	Ground
	Shield	Shield

Ethernet Gateway Link150 Characteristics

Environmental Characteristics

Characteristics		Value
Conforming to standards		• IEC/UL 60950 • AS/ZNS 60950
		• CSA C22.2 • IEC/UL 61010-2-201 • EN55024 • EN55022 • IEC61000-6-2 Ed.2
Certification		• cULus, CE, RCM, and FCC marking
Ambient temperature	Storage	-40 to +85 °C (-40 to +185 °F)
	Operation	-25 to +70 °C (-13 to +158 °F)
Pollution		Level 2

Mechanical Characteristics

Characteristics	Value
Shock resistance	Conforming to IEC 60068-2-27 15 g/11 ms, 1/2 sinusoidal
Resistance to sinusoidal vibrations	Conforming to IEC/EN 60068-2-6

Electrical Characteristics

Characteristics		Value	
		24 Vdc mode	POE mode
Power Supply		24 Vdc, -20%/+10% (19.2 Vdc -26.4 Vdc)	As per IEEE 802.3af compliant
Consumption	Typical	24 Vdc, 130 mA at 20 °C	48 Vdc, 65 mA at 20 °C

Physical Characteristics

Characteristics	Value
Dimensions	72 x 105 x 71 mm (2.83 x 4.13 x 2.79 in)
Mounting	DIN rail
Weight	175 g without packing
Degree of protection of the installed module	• On the front panel (wall-mounted enclosure): IP4x • Connectors: IP2x • Other parts: IP3x
Connections	• Screw type terminal block for 24 Vdc power • RJ45 for communication
Installation type	Open type equipment

Ethernet Gateway Link150 Firmware Update

Description

Link150 firmware consists of two types of components:

- The executable binary component
- The webpage and supporting file (Data file)

The firmware on the Link150 can be updated using FTP.

NOTE: The *gateway.bin* and *exploit.bin* files are incompatible.

NOTICE

HAZARD OF EQUIPMENT DAMAGE

- Do not upgrade the *gateway.bin* file in a system which has the *exploit.bin* file.
- Do not power off/network cable during firmware upgrade.

Failure to follow these instructions can result in equipment damage.

Upgrading the Firmware

Step	Action
1	Check the firmware current version. Follow the steps given in Checking the Executable Binary Component Firmware Version (see page 19).
2	If the firmware version is 5.1.15 or later, follow the steps given in Standard Firmware Upgrade Process (Upgrade from Version 5.1.15 or Later) (see page 19).
3	If the firmware version is 5.0.21 or up to 5.0.29, follow the steps given in Standard Firmware Upgrade Process (Upgrade from Version 5.0.21 or up to 5.0.29) (see page 20).
4	If the firmware version is 5.0.11 or earlier, follow the steps given in Special Instruction for Upgrade from Legacy Firmware (Version 5.0.11 or Earlier) (see page 20).

Checking the Executable Binary Component Firmware Version

Step	Action	Result
1	Open the web browser and log in to the Link150.	Opens the Link150 home page.
2	• For checking the firmware version 5.1.15 or later, go to the Home menu, in the Device Identification page, locate the firmware version. • For checking the firmware version up to 5.0.29, go to the Diagnostics menu, in the Device Information page, locate the firmware version NOTE: If you have updated the firmware recently, press F5 to refresh the webpage and update the displayed firmware number.	Determines the firmware version of the Link150.

Standard Firmware Upgrade Process (Upgrade from Version 5.1.15 or Later)

Step	Action	Result
1	Open Link150 device webpage using any web browser <i>http or https://<<IP Address>></i> or discover Link150 device in Windows network tab. NOTE: • Default IP address = 169.254.YY.ZZ • Default login user name = Administrator • Password = Gateway (Make sure that the Administrator password is not empty.)	Opens the Link150 home page.
2	To upgrade the firmware version, select the Maintenance menu, go to Upgrade submenu, click Firmware , and then click Browse... button.	Opens the Choose File Open dialog box.
3	Select the Link150 delivery package from unzipped firmware release folder ../Binaries/Link150_Delivery_Package_Vxxx_yyy_zzz.zip file.	Selects the delivery package file.
4	Click Upgrade button.	Displays the upload progress bar and Do you want to apply the firmware upgrade now? pop-up message once upload is completed.

Step	Action	Result
5	Click Yes to apply the firmware upgrade.	Displays upgrade progress bar and successfully completes the firmware upgrade.

NOTE:

- YY.ZZ are the last 2 bytes of the Link150 MAC address (to be found on the Link150 device side label).
 - After successful firmware upgrade, Link150 takes 40 seconds to restart.
- If firmware upgrade is not successful, then Link150 displays errors.

Standard Firmware Upgrade Process (Upgrade from Version 5.0.21 or Up to 5.0.29)

Step	Action	Result
1	Download the latest Link150 firmware Link150FirmwareAndDataFilesVAAABBBCCC.zip file from www.se.com (where AAABBBCCC is the datafile version number).	Downloads the Link150 firmware file.
2	Unzip Link150FirmwareAndDataFilesVAAABBBCCC.zip and store it in your local PC.	Stores the unzipped Link 150 firmware folders in the local PC.
3	Open the Link150FirmwareAndDataFilesVAAABBBCCC folder.	Opens the Link 150 firmware folders Firmware_Version_equal_to_5.0.11. Firmware_Version_greater_than_5.0.11
4	Right-click the FirmwareUpgrade.bat, and then click Edit .	Opens FirmwareUpgrade.bat in a notepad format.
5	Set the IP address, FTP user name, and password of the module being upgraded in the FirmwareUpgrade.bat file. NOTE: • Default IP address = 169.254.YY.ZZ • Default FTP user name = Administrator • Default FTP password = Gateway (Make sure that the Administrator password is not empty.)	The IP address, user name, and password are updated in the FirmwareUpgrade.bat file.
6	Save and exit the FirmwareUpgrade.bat.	The IP address, user name, and password are set in the FirmwareUpgrade.bat file.
7	Double-click the FirmwareUpgrade.bat file.	The firmware and data file upgrade starts.
8	Wait until the FirmwareUpgrade.bat file closes itself.	The firmware and data file upgrade is completed.

NOTE:

- YY.ZZ are the last 2 bytes of the Link150 MAC address. For example, A Link150 with MAC address 00-B0-D0-86-BB-F7 (hexadecimal) or 0-176-208-134-187-247 (decimal), set the IP address as 169.254.187.247 in the batch file.
- For the Link150 with the MAC address 00-B0-D0-86-02-12 (hexadecimal) or 0-176-208-134-02-18 (decimal), set the IP address as 169.254.2.18 in the batch file.
- After successful firmware upgrade, Link150 takes 40 seconds to restart.

Special Instructions for Upgrade from Legacy Firmware (Version 5.0.11 or Earlier)

Step	Action	Result
1	Download the latest Link150 firmware Link150FirmwareAndDataFilesVAAABBBCCC.zip file from www.se.com (where AAABBBCCC is the datafile version number).	Downloads the Link150 firmware file.
2	Unzip Link150FirmwareAndDataFilesVAAABBBCCC.zip and store it in your local PC.	Stores the unzipped Link 150 firmware folders in the local PC.
3	Open the Link150FirmwareAndDataFilesVAAABBBCCC folder.	Opens the Link 150 firmware folders Firmware_Version_equal_to_5.0.11. Firmware_Version_greater_than_5.0.11
4	Right-click the FirmwareUpgrade_1.bat, and then click Edit .	Opens FirmwareUpgrade_1.bat in a notepad format.

Step	Action	Result
5	Set the IP address, FTP user name, and password of the module being upgraded in the <code>FirmwareUpgrade_1.bat</code> file. NOTE: • Default IP address = 169.254.YY.ZZ • Default FTP user name = Administrator • Default FTP password = Gateway (Make sure that the Administrator password is not empty.)	The IP address, user name, and password are updated in the <code>FirmwareUpgrade_1.bat</code> file.
6	Save and exit the <code>FirmwareUpgrade_1.bat</code> file.	The IP address, user name, and password are set in the <code>FirmwareUpgrade_1.bat</code> file.
7	Double-click the <code>FirmwareUpgrade_1.bat</code> file.	The firmware and data file upgrade starts.
8	Wait until the <code>FirmwareUpgrade_1.bat</code> file closes itself. NOTE: The device will reboot. This may take 30–40 seconds.	The firmware and data file upgrade is partially completed.
9	Repeat steps 4–8 for <code>FirmwareUpgrade_2.bat</code> file once the network status of the device is up.	The firmware and data file upgrade is completed.

NOTE:

- YY.ZZ are the last 2 bytes of the Link150 MAC address. For example, A Link150 with MAC address 00-B0-D0-86-BB-F7 (hexadecimal) or 0-176-208-134-187-247 (decimal), set the IP address as 169.254.187.247 in the batch file.
- For the Link150 with the MAC address 00-B0-D0-86-02-12 (hexadecimal) or 0-176-208-134-02-18 (decimal), set the IP address as 169.254.2.18 in the batch file.
- After successful firmware upgrade Link150 takes 40 seconds to restart.
- It is mandatory to press the Factory Reset pin. For more details, refer to Factory Reset ([see page 14](#)).

Updating the Webpages and Device Supporting Files Using FTP

Step	Action	Result
1	Start the web browser, type <code>ftp://<device IP address></code> in the Address box, and then press Enter .	Starts the FTP session and prompts for user name and password.
2	Type <code>Administrator</code> as the user name and <code>Gateway</code> as the password in the boxes, and then click Log On .	Succeeds login process and locates the directory <code>wwwroot</code> .
3	Upgrade the webpage by: • locate <code>wwwroot</code> directory. Except the folders, delete all the files in <code>wwwroot</code> directory. Drag and drop the new files from the <code>wwwroot</code> folder of the newly saved <code>Link150_DataFiles_Vx.y.z</code> file. • locate <code>logging/templates</code> directory. Delete all the files in <code>logging/templates</code> directory. Drag and drop the new files from the <code>logging/templates</code> folder of the newly saved <code>Link150_DataFiles_Vx.y.z</code> file.	• Deletes the files from the directory except the folder. • Adds the new files from the PC to the directory. • Updates the webpages and the device supporting files.
4	Restart the Link150.	Updates the webpages and the device supporting files.

NOTE: The device date and time will be set to default values after firmware upgrade.

NOTE: The updating the webpages and device supporting files using FTP is applicable only up to firmware version 5.0.29.

Updating the Gateway Application Using FTP

Step	Action	Result
1	Start the web browser, type <code>ftp://<device IP address></code> in the Address box, and then press Enter .	Starts the FTP session and prompts for user name and password.
2	Type Administrator as the user name and Gateway as the password in the boxes, and then click Log On .	Succeeds the login process.
3	Double-click and switch to fw directory. NOTE: You can delete the gateway if it is already available in the directory.	Deletes the gateway file from the directory except the folder.
4	In your local PC, locate the latest version of firmware and then copy and paste it on the FTP client software or drag and drop it to the working directory.	Link150 reboots and it runs with the new version of the firmware.
5	Log out or close the FTP client software and close the FTP session.	Succeeds the logout process.

NOTE: Updating the gateway application using FTP is applicable only up to firmware version 5.0.29.

Schneider Electric Green Premium™ Ecolabel

Description

Green Premium by Schneider Electric is a label that allows you to develop and promote an environmental policy while preserving your business efficiency. This ecolabel is compliant with up-to-date environmental regulations.



Accessing Green Premium

Green Premium data on labeled products can be accessed online through any of the following ways:

- By navigating to the [Green Premium](#) page on the Schneider Electric website.
- By scanning the QR code displayed in the following image:



Checking Products Through the Schneider Electric Website

To check the environmental criteria of a product using a PC or smartphone, follow these steps:

Step	Action
1	From www.se.com , select Support → Additional Links → Green Premium Eco Label .
2	Click Find Green Premium Products to open the search tool webpage.
3	Fill in the fields: • Enter the commercial reference or product range of the product to search for. • Optional: Enter the manufacturing date code of the product with format YYWW. By default, this field is filled with the date of the search.
4	To search for several products simultaneously, click the Add product button, and then fill in the fields.
5	Click Check product(s) to generate a report of the environmental criteria available for the products with the entered commercial references.

Environmental Criteria

The Green Premium ecolabel provides documentation on the following criteria about the environmental impact of the products:

- RoHs: European Union Restriction of Hazardous Substances (RoHS) directive.
- REACH: European Union Registration, Evaluation, Authorization, and Restriction of Chemicals regulation.
- PEP: Product Environmental Profile.
- EoLI: End of Life Instructions.

RoHs

Schneider Electric products are subject to RoHS requirements at a worldwide level, even for the many products that are not required to comply with the terms of the regulation. Compliance certificates are available for products that fulfill the criteria of this European initiative, which aims to eliminate hazardous substances.

REACH

Schneider Electric applies the strict REACH regulation on its products at a worldwide level, and discloses extensive information concerning the presence of SVHC (Substances of Very High Concern) in all of these products.

PEP

Schneider Electric publishes complete set of environmental data, including carbon footprint and energy consumption data for each of the life cycle phases on all of its products, in compliance with the ISO 14025 PEP ecopassport program. PEP is especially useful for monitoring, controlling, saving energy, and/or reducing carbon emissions.

EoLI

These instructions provide:

- Recyclability rates for Schneider Electric products.
- Guidance to mitigate personnel hazards during the dismantling of products and before recycling operations.
- Part identification for recycling or for selective treatment, to mitigate environmental hazards/incompatibility with standard recycling processes.

Chapter 2

Link150 Web Server (Up to Firmware Version 5.0.29)

What Is in This Chapter?

This chapter contains the following sections:

Section	Topic	Page
2.1	Ethernet Gateway Link150	26
2.2	Link150 Web Server - Configuration & Settings Pages	32
2.3	Link150 Web Server - Diagnostics Pages	49

Section 2.1

Ethernet Gateway Link150

What Is in This Section?

This section contains the following topics:

Topic	Page
Access to Link150 Webpages	27
Link150 User Interface Layout	30
Link150 Webpage Description	31

Access to Link150 Webpages

Supported Web Browsers

Browser	Version with Windows XP	Version with Windows Vista	Version with Windows 7
Internet Explorer	IE 8.0	IE 9.0	IE 10.0
Firefox	15.0	20.0	20.0
Chrome (recommended)	24.0 and later	24.0 and later	24.0 and later

First Access to the Link150 Webpages

The Link150 name should be configured during the first access to the Link150 webpages.

 WARNING
POTENTIAL COMPROMISE OF SYSTEM AVAILABILITY, INTEGRITY, AND CONFIDENTIALITY Change default passwords at first use to help prevent unauthorized access to device settings, controls, and information. Failure to follow these instructions can result in death, serious injury, or equipment damage.

The procedure to access the Link150 webpages for the first time depends on the operating system of a computer:

- Windows Vista, Windows 7, or newer operating systems
- Windows XP or older operating systems

First Access Through PC with Windows 7, Windows Vista, or Newer Operating Systems

Step	Action
1	Disconnect the PC from the local area network (LAN) and switch off Wi-Fi if any.
2	Connect an Ethernet cable from the computer to the Link150 or to the Ethernet switch inside the panel. NOTE: Perform this action when the device goes to fallback ip.
3	Open web browser.
4	Click Network and the Link150-XXYYZZ appears in the list of devices. NOTE: If the Link150-name is not displayed in the list of devices in Windows Explorer , verify that the PC Link150 are connected through the router.
5	Double-click the selected Link150-XXYYZZ . The login page automatically opens in the browser.
6	Enter Administrator as the user name and Gateway as the password. The home page opens in the browser. NOTE: The user name and password are case-sensitive.
7	To locate the Link150-XXYYZZ, select the Configuration & Settings menu, go to Device Location/Name submenu, click Device physical location , and then click Blink ON . The RS485 LED of the selected Link150-XXYYZZ blinks for 15 seconds with 1 s ON and 1 s OFF (test mode).
8	To name the Link150-XXYYZZ, select the Configuration & Settings menu, go to Device Name submenu, click Device Name , go to Device Name Configuration , and then enter Link150-XXYYZZ and click Apply to set the Link150 name.
9	Write the Link150 name on a blank device name label and stick it on the existing one.

NOTE:

- Follow the preceding procedure when link150 goes to fallback IP due to duplicate IP detection or due to any other case.
- XXYYZZ are the last 3 bytes of the MAC address in hexadecimal format.
- Check the firewall settings if DPWS is not enabled.

First Access Through PC with Windows XP or Older Operating Systems

Step	Action
1	Disconnect your local computer from all networks (LAN) and switch off Wi-Fi if any.
2	Connect an Ethernet cable from the computer to the Link150. NOTE: Perform this action when the device goes to fallback ip.
3	Start Internet Explorer 8, Mozilla Firefox 15, Chrome 24 (or later versions). NOTE: The computer automatically uses the default 169.254.#.# (#=0–255) and the default subnet mask 255.255.0.0.
4	In the address box, type 169.254.YY.ZZ, where YY and ZZ are the last 2 bytes of the Link150 MAC address (found on the Link150 side label), and then press Enter . The home page opens in the browser. Example: For the Link150 with the MAC address 00-B0-D0-86-BB-F7 or 0-176-208-134-187-247 in decimal, type 169.254.187.247 in the address box.
5	Press Enter , the login page automatically opens in the browser.
6	Type Administrator as the user name and Gateway as the password. The homepage automatically opens in the browser. NOTE: The user name and password are case-sensitive.
7	To locate the Link150-XXYYZZ, select the Configuration & Settings menu, go to Device Location/Name submenu, click Device physical location , and then click Blink On . RS485 LED of the selected Link150-XXYYZZ blinks for 15 seconds.
8	To name the Link150-XXYYZZ, select the Configuration & Settings menu, go to Device Location/Name submenu, click Device Name , go to Device Name Configuration , and then enter Link150-XXYYZZ and click on Apply to set the Link150 name.
9	Write the Link150-name on a blank device name label and stick it on the existing one.

NOTE:

- Follow the preceding procedure when link150 goes to fallback IP due to duplicate IP detection or due to any other case.
- XXYYZZ are the last 3 bytes of the MAC address in hexadecimal format.

Access to Webpages

Follow the Network Discovery, Name Browsing, and IP Address Browsing process to access the webpages.

Webpage access depends on the IT infrastructure.

Network Discovery

Follow the below procedure to access the Link150 webpages after the Link150 name has been configured.

Step	Action
1	Connect the Link150 or the Ethernet switch inside the panel to the local area network (LAN).
2	Connect the computer to the local area network (LAN).
3	Open the web browser.
4	Click Network . The Link150-name gets displayed in the list of devices. NOTE: If the Link150-name is not displayed in the list of devices in Windows Explorer . Verify that the PC Link150 are connected through the router.
5	Double-click the Link150-name. The login page automatically opens in the browser.

NOTE: The preceding procedure is applicable for windows vista, windows 7 or later

Name Browsing

DNS server is mandatory to browse by name. For more details about DNS, refer to DNS (*see page 36*).

Step	Action
1	Connect the Link150 or the Ethernet switch inside the panel to the local area network (LAN).
2	Connect the computer to the local area network (LAN).
3	Start the web browser.
4	In the address box, type the Link150-name that is written on the sticker located on the front face of the selected Link150.
5	Press Enter and the login page automatically opens in the browser. NOTE: If the Link150-name does not appear in the list of devices in Windows Explorer . Verify that the PC Link150 are connected through the router.

IP Address Browsing

In IP Address Browsing, IP configuration can be done manually or it gets configured through DHCP or BootP.

Step	Action
1	Connect the Link150 or the Ethernet switch inside the panel to the local area network (LAN).
2	Connect the computer to the local area network (LAN).
3	Start the web browser.
4	In the address box, enter the IP address given by the IT administrator.
5	Press Enter and the login page automatically opens in the browser. NOTE: If the login page in the web browser does not open or does not display correctly, verify the path. For example: In the Internet Explorer browser, verify that Internet Explorer\Tools\Compatibility View Settings\Display Intranet sites in Compatibility View are checked.

First Time Log In

The web browser is a tool for reading and writing data. First time when you log in to Link150 webpage, you can use the default user name and password. To prevent unauthorized access, you can change your password from the **User Accounts** page under **Configuration & Settings** menu.

⚠ WARNING
POTENTIAL COMPROMISE OF SYSTEM AVAILABILITY, INTEGRITY, AND CONFIDENTIALITY
Change default passwords at first use to help prevent unauthorized access to device settings, controls, and information.
Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTE: The password should not be shared or distributed to unauthorized personnel. The password should not contain any personal or obvious information.

Link150 User Interface Layout

Overview

This graphic shows the Link150 user interface layout.



Banner

The banner displays the following information at the top of all the pages.

Generic information	Description
User name	Name of the user who has logged in
Logout	To log out the Link150 session, click Logout or close your browser. It is recommended to log out from the Link150 when it is not in use.

Main Tabs

The main tabs are:

- Diagnostics
- Configuration & Settings

Subtabs

The subtabs display the submenus under the selected main tab.

Action Buttons

The action buttons correspond to the selected tab.

The following table describes the interface buttons:

Button	Action
Apply	Applies the changes.
Cancel	Cancels the modifications to return to the last saved settings.
Defaults	Displays the default values.

Display Zone

The display zone shows the selected sub tab in detail with all related fields.

Link150 Webpage Description

Diagnostics Webpage

Diagnostics submenu	Webpage	Description
General	Statistics (see page 50)	Displays diagnostic data used to troubleshoot network-related problems.
Product Information	Device Information (see page 53)	Contains information about the Link150 including: • Device Name • Product name • Serial number • Model number • Firmware version • Unique identifier • MAC address • IPv4 address • IPv6 link local address • Manufacture date
Device Health Check	Read Device Registers (see page 54)	Displays register data for devices connected locally to the Link150.

Configuration & Settings Webpage

Configuration & Settings Submenu	Webpage	Description
Device Location/Name	Device Physical Location (see page 33)	Click Blink ON to locate the Link150 device. The RS485 LED blinks for 15 s.
	Device Name (see page 34)	Configures the Link150 device name
Network Configuration	Ethernet Configuration (Dual port) (see page 35)	Configures the Ethernet ports.
	IP Configuration (see page 36)	Configures the IP parameters including IPv4, and DNS settings.
	Advanced Ethernet Settings (see page 37)	Configures the advanced Ethernet settings.
	MBTCP/IP Filtering (see page 38)	Configures the maximum number of Modbus TCP/IP client connections. Configures the IP addresses that can access the Link150 through Modbus TCP/IP.
	Serial Port (see page 39)	Configures serial communication parameters.
Date/Time Configuration	Date and Time (see page 41)	Sets the date and time manually.
Device Configuration	Device List (see page 42)	Configures the Modbus devices.
Other Configuration	SNMP Parameters (see page 45)	Configures Simple Network Management Protocol (SNMP).
	Advanced Services Control (see page 46)	Enables or disables the advanced services control parameters.
	User Accounts (see page 47)	Manages groups and users, including user email addresses.
	Webpage Access (see page 48)	Configures webpage access rights for each user group.

Section 2.2

Link150 Web Server - Configuration & Settings Pages

What Is in This Section?

This section contains the following topics:

Topic	Page
Device Location/Name	33
Device Name	34
Ethernet Configuration (Dual Port)	35
IP Configuration	36
Advanced Ethernet Settings	37
Modbus TCP/IP Filtering	38
Serial Port	39
Date and Time	41
Device List	42
SNMP Parameters	45
Advanced Services Control	46
User Accounts	47
Webpage Access	48

Device Location/Name

Device Physical Location

Step	Action	Result
1	From the Link150 menu bar, click Configuration & Settings .	Opens the Configuration & Settings menu.
2	In the Device Location/Name submenu, click Device Physical Location .	Opens the Device Physical Location page.
3	In the Device Physical Location webpage, click Blink ON .	The Link150 RS485 LED blinks for 15 s (1 s ON, 1 s OFF).

NOTE: This functionality temporarily overrides the LED blinking pattern of Modbus RS485 communication (if this communication exists).

Device Name

Naming the Link150

Step	Action	Result
1	From the Link150 menu bar, click Configuration & Settings .	Opens the page with all the submenu items.
2	In the Device Location/Name submenu, click Device Name .	Opens the Device Name page.
3	In Device Name webpage, enter the device name and click Apply .	The entered device name is updated.

Ethernet Configuration (Dual Port)

Ethernet

Parameter	Description	Settings
MAC address	A unique media access control address of the Link150. The MAC address is printed on the side label of the Link150.	-
Frame format	Used to select the format for data sent over an Ethernet connection.	• Ethernet II • 802.3 • Auto (Factory setting)

Ethernet Port Control

Parameter	Description
Speed and mode for port #1	The Link150 automatically negotiates the physical Ethernet connection speed and transmission mode for Ethernet port 1.
Speed and mode for port #2	The Link150 automatically negotiates the physical Ethernet connection speed and transmission for Ethernet port 2.

Broadcast Storm Protection

Parameter	Description	Settings
Level	Defines the storm protection level. The Link150 limits the amount of information it broadcasts or rebroadcasts (based on this setting) to reduce collisions or network traffic. NOTE: If the level is changed, you are prompted to restart the device to implement changes.	• 0 • 1 • 2 • 3 • 4 (Factory setting) • 5 • 6
Committed Information Rate	Defines the read-only value of the storm protection level in kbit/s.	-

IP Configuration

IPv4 Configuration

Parameter	Description	Settings
Obtain an IP address automatically using	Used to select the mode for assigning IPv4 parameters. Obtain IPv4 parameters automatically using BOOTP or DHCP.	- DHCP (Factory setting) - BOOTP
Manual IP address	Used to enter the static IP address of the Link150.	169.254.X.Y (Factory setting) NOTE: X and Y are the decimal equivalent of last two hexadecimal bytes of LINK150 Mac address(found on the LINK150 label).
Manual Subnet mask	Used to enter the Ethernet IP subnet mask address of your network.	255.255.0.0 (Factory setting)
Manual Default gateway	Used to enter the gateway (router) IP address used for wide area network (WAN) communication.	169.254.2.1 (Factory setting)

IPv6 Configuration

Parameter	Description	Settings
Enable IPv6	Defines the IPv6 configuration.	Enabled (Factory setting) NOTE: It is unavailable to disable.
Link local address	Displays the IP address in IPv6 format. You can use this IP address to open the Link150 homepage.	–

DNS

Parameter	Description	Setting
Obtain DNS addresses automatically	Defines the dynamic behavior of the DNS server address configuration. Used to obtain the IP address from the DNS server automatically. NOTE: Domain name system (DNS) is the naming system for computers and devices connected to a local area network (LAN) or the Internet.	–
Manual Primary server address	Defines the IPv4 address of the primary DNS server.	–
Manual Secondary server address	Defines the IPv4 address of the secondary DNS server. Used to perform a DNS resolution when the resolution fails with the primary DNS server.	–

Duplicate IP Address Detection

While connected to your network, the Link150 publishes its IP address. To avoid any duplicate IP address conflicts, the Link150 uses the address resolution protocol (ARP) to see if any other device on your network is using the same IP address. The table below explains how the Link150 handles a duplicate IP address when it is detected.

Duplicate IP Address Scenario

Scenario	Duplicate IP Handling	Network Status LED
Ethernet link detected	Reverts to the default IP address, subnet mask, and gateway address. ARP requests are sent once every 15 seconds until the IP address is available. Link150 uses the IP address when it is available.	Steady red
Manual address change	Reverts to the default IP address, subnet mask, and gateway address. The ARP requests are sent once every 15 seconds until the IP address is available. The Link150 uses the IP address when it is available.	Steady red
Receives an ARP request	If more than one ARP request is detected within 10 seconds, initiate the process to reacquire the IP.	OFF

Advanced Ethernet Settings

Configuring Advanced Ethernet Settings

NOTICE

Only qualified personnel should modify the advanced Ethernet settings of the Link150. Perform such modifications only after you have read and understood the advanced Ethernet settings.

Failure to follow these instructions can result in equipment damage.

Step	Action	Result
1	Click Advanced Ethernet Setting on the Configuration & Settings page.	Opens the Advanced Ethernet Setting page.
2	Configure the advanced Ethernet settings, and then click Apply .	Updates Link150 Ethernet and TCP/IP settings.

NOTE: Click the **Defaults** button to change the advanced Ethernet settings to default value.

List of Link150 Advanced Ethernet Settings

Option	Description	Settings
Time to Live	Identifies the number of routers a TCP packet can pass.	1 to 255 (hops) 60 hops (Factory setting)
Enable TCP Keep Alive	Allows you to enable or disable the TCP keep alive transmissions. If disabled, the keep alive packets do not get sent and the connection remains open until it gets closed.	• Enabled (Factory setting) • Disabled
Time	A timer that detects when a connected device on an idle connection becomes unavailable due to events such as a reboot or shutdown.	1 to 65,000 s 30 s (Factory setting)
ARP Cache Timeout	Allows you to specify how long the entries can be kept in the Address Resolution Protocol (ARP) cache.	1 to 65,000 m 15 m (Factory setting)

Modbus TCP/IP Filtering

Description

This page allows you to define the level of access for Modbus TCP/IP clients connected to Link150.

Connections

You can select either 8, 16, or 32 Modbus TCP/IP client connections. The maximum number of connections supported is 32.

NOTE: When the maximum number of IP connections is changed, restart the device. The settings are applied only after restarting the Link150.

IP Filtering

Parameter	Description	Setting
Enable IP_Filtering	Activates IP address filtering and assigns the designated level of access.	• Enabled • Disabled (Factory setting)
Address	List of user-defined IP addresses to be granted or denied access to connected devices.	10 addresses (Maximum allowed IP addresses) NOTE: It also allows you to enter the IP address with the wildcard character (*). For Example, 10.***.***.***
Accessibility	Defines the access level for the corresponding IP address.	• Read: The following Modbus TCP/IP function codes are allowed: ○ 1 (0x01) ○ 2 (0x02) ○ 3 (0x03) ○ 4 (0x04) ○ 7 (0x07) ○ 8 (0x08) ○ 11 (0x0B) ○ 12 (0x0C) ○ 17 (0x11) ○ 20 (0x14) ○ 24 (0x18) ○ 43 (0x2B), with subfunction codes 14 (0x0E), 15 (0x0F), and 16 (0x10). ○ 100 (0x64) • None: Access to the IP address is blocked. • Read/Write: Full access is provided.
Allow Anonymous IP	Allows all Modbus TCP/IP clients to have read-only access.	• Enabled • Disabled (Factory setting)

Serial Port

Setting Procedure

Step	Action	Result
1.	From the Configuration & Settings page, under Network Configuration , click Serial Port .	Opens the Serial Port page.
2.	Select your mode, physical interface, transmission mode, baud rate, parity, termination, biasing, and response timeout.	Selects the serial port options.
3.	If you select Slave mode, enter the IP addresses for the remotely connected devices.	Enters the IP addresses of the remote devices
4.	Click Apply .	Updates the serial port settings of Link150.

Serial Port Settings

Parameter	Description	Settings
Mode (Device reboots on mode change)	Selects how the serial COM port on the Link150 is utilized (master or slave). NOTE: When you change the mode and click Apply , the Link150 reboots and clears the device list configuration.	● Master (Factory setting) ● Slave NOTE: ION protocol supports only Master mode.
Physical Interface	Selects how the Link150 serial port is physically wired.	● RS485 2-wire (Factory setting) ● RS485 4-wire ● RS232
Transmission Mode	Selects how data is transmitted over a serial connection.	● For master mode: ○ Automatic (Factory setting) ○ Modbus ASCII NOTE: Transmission Mode is disabled for ION protocol. ● For slave mode: ○ Modbus RTU (Factory setting) ○ Modbus ASCII NOTE: Modbus Automatic mode allows you to communicate to Modbus RTU, Jbus, and PowerLogic™ (SY/MAX) slave devices on the same daisy chain.
Baud Rate	Used to select the data transmission speed over a serial connection.	● 19200 bps (Factory setting) ● 2400 bps ● 4800 bps ● 9600 bps ● 38400 bps ● 56000 bps⁽¹⁾ ● 57600 bps⁽¹⁾
Parity	Used to select if data is checked for accuracy using a parity bit.	● Even (Factory setting) ● Odd ● None
Stop bits	Stop bits sent at the end of every character allow the receiving signal hardware to detect the end of a character and to re synchronize with the character stream.	● Auto (Factory setting) ● 1 bit ● 2 bits NOTE: Auto sets stop bit as 1 when you set Parity to Even or Odd and as 2 when you set Parity to None .
Termination ⁽²⁾	Used to terminate the RS485 line in order to prevent reflections. Setting Termination to Enabled enables the termination resistor.	● Enabled (Factory setting) ● Disabled
(1) Only available when Physical Interface is set to RS232 and Transmission Mode is set to Modbus ASCII. (2) Only available when Physical Interface is set to RS485 4-wire or RS485 2-wire. (3) This parameter is not available for ION protocol.		

Parameter	Description	Settings
Biasing ⁽²⁾	Used to prevent invalid data bits by forcing the transmission line into a known state. The transmission line into the RS-485 port enters an indeterminate state when it is not being transmitted to. This indeterminate state causes the receivers to receive invalid data bits from the noise picked up on the cable.	• Enabled (Factory setting) • Disabled
Response Timeout ⁽³⁾	Used to select how long the Link150 waits to receive a response from a serial device. NOTE: The Response Timeout parameter is disabled if the Mode is set to Slave.	• 3 seconds (Factory setting) • 0.1 to 10 seconds
Remote Device Connections (in slave mode only)	Used to define a list of Modbus TCP/IP addresses for the Link150 to use during slave mode communications.	-
(1) Only available when Physical Interface is set to RS232 and Transmission Mode is set to Modbus ASCII. (2) Only available when Physical Interface is set to RS485 4-wire or RS485 2-wire. (3) This parameter is not available for ION protocol.		

Date and Time

Local Date and Time

This page allows you to enter the local date and time manually.

NOTE: As there is no SNTP or RTC, the date or time needs to be reset in the event of power loss.

Parameter	Description	Setting
Current Date(yyyy-mm-dd)	Allows you to set the present date.	Date format: yyyy-mm-dd
Current Time(h:min:sec)	Allows you to set the present time.	Time format: h:min:sec

Device List

Description

The device list is used for defining the list of devices connected to the Ethernet port or serial port.
The list of connected devices is defined manually by adding individual devices.

Master Mode Device List Setup

For **Master** mode, the usage of the COM port is:

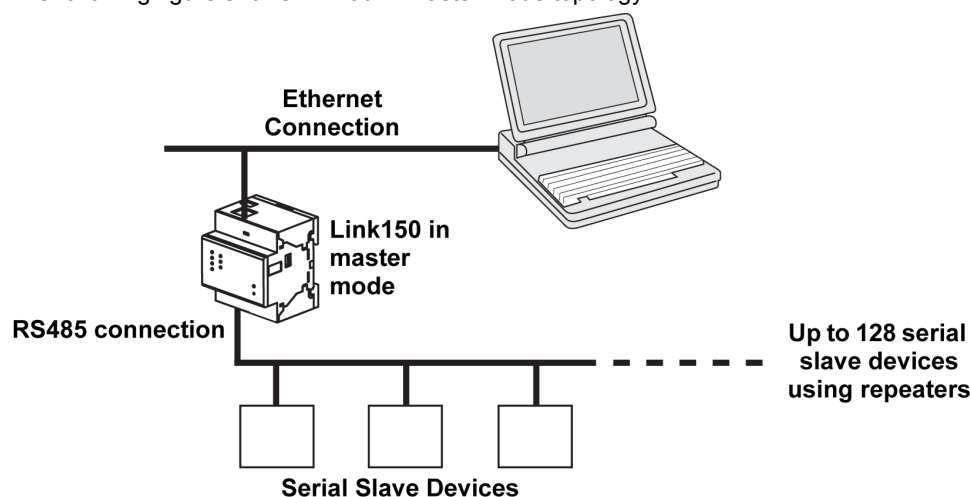
- Modbus RTU devices do not have to be defined in the **Device List**, but it helps you manage your system.
- PowerLogic™ protocol (SY/MAX) devices must be defined in the **Device List**.

NOTE: If none of the protocols are defined, Modbus RTU is available as a default protocol.

NOTE: The number of devices supported can be viewed using the number of viewable devices. Response timeout can be configured in serial port page under the **Configuration & Settings** tab.

NOTE: Do not use the serial slave addresses 1 or 16 in automatic transmission mode on a daisy chain with mixed protocols. For example, a single daisy chain with some devices using PowerLogic™ protocol and others using Modbus RTU/Jbus protocol.

The following figure shows link150 in master mode topology:



If you selected **Master** mode on the **Serial Port** page, follow the steps to set up the device list:

Step	Action	Result
1.	From the Configuration & Settings page, click Device List .	Opens the Device List page.
2.	Select the number of viewable devices (16 to 128) and click Apply .	Based on the number of viewable devices selected, the number of rows in the device list page appears. NOTE: System communication degrades as the number of devices grow.
3.	Select the Protocol .	Selects the protocol of the connected device.
4.	Enter the Device Name .	Enters the name of the device.
5.	In the Local ID box, type the local ID (address) of the serial slave device.	Enters the local address of the device.
6.	Repeat steps from 3 to 5 until all of the devices are entered.	Enters all of the connected devices.
7.	Click Apply .	Updates the Device List settings

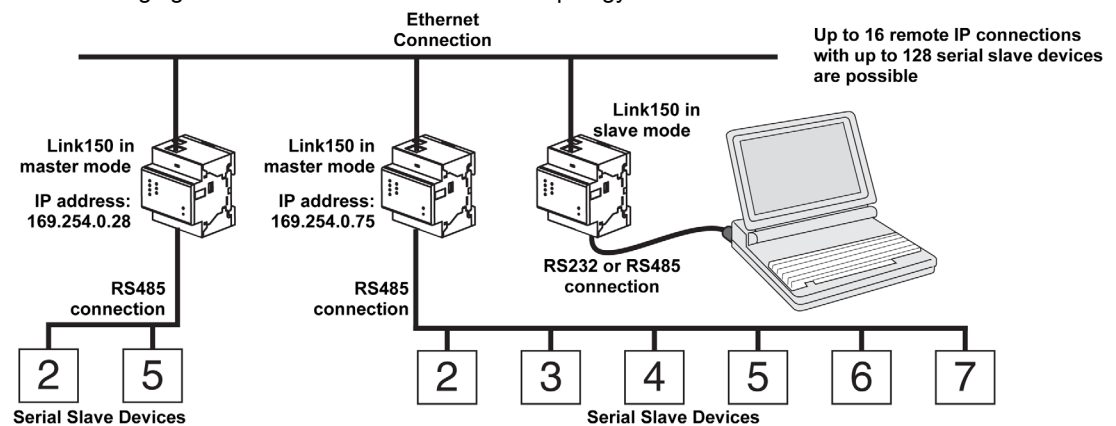
Device List Parameters for Master Mode

Parameters	Description	Settings
Number of Viewable Devices	The maximum number of viewable devices displayed on the webpage.	16, 32, 48, 64, 80, 96, 112, or 128
Protocol	Selects the protocol type.	• Modbus (Factory setting) • PowerLogic • JBus
Device Name	Denotes the name of the slave device.	– NOTE: Device Name must be a unique value.
Local ID	The local address of the device connected to the Link150.	For serial port: 1–247 and 255 NOTE: Local ID must be a unique value.

Slave Mode Device List Setup

Serial port slave mode allows the serial Modbus master devices to access information from serial slave devices across a TCP/IP network.

The following figure shows link150 in slave mode topology:



If you selected Slave mode on the **Serial Port** page, follow the steps below to set up the device list:

NOTE: Before configuring the device list in slave mode the remote device IP address needs to be configured in the **Serial Port** page

Step	Action	Result
1.	From the Configuration & Settings page, click Device List .	Opens the Device List page.
2.	Select the number of viewable devices (1 to 128), and click Apply .	Selects the number of viewable locations that can be used to define serial slave devices connected to the Link150.
3.	Select the Connection	Selects the Modbus TCP/IP address to associate with the remote ID.
4.	Enter the Device Name .	Displays the name of the device.
5.	In the Local ID box, enter the local ID (address) of the serial slave device.	Enters the address of the device that the local Modbus master device will use to access the remote device.
6.	In the Remote ID box, enter the remote ID (address) of the serial slave device.	Enters the serial slave address of the remotely connected device.
7.	Repeat steps 3 through 6 until all of the devices are entered.	Enters all of the mapping information for the Link150 to communicate to the remote devices.
8.	Click Apply .	Updates the Device List settings

Device List Parameters for Slave Mode

Parameters	Description	Settings
Number of Viewable Devices	The maximum number of viewable devices displayed on the webpage.	16, 32, 48, 64, 80, 96, 112, or 128
Connection	Selects the Modbus TCP/IP address to associate with the remote ID.	The Remote Device IPs configured in the Serial Port page.
Device Name	Denotes the name of the slave device.	– NOTE: Device Name must be a unique value.
Local ID	The local address of the device connected to the Link150.	For serial port: 1–247 NOTE: Local ID must be a unique value.
Remote ID	The remote ID (address) of the serial slave device that is remotely connected.	1–247 and 255 NOTE: Remote ID must be a unique value for the same connection.

SNMP Parameters

Manager IP Parameters

The Link150 supports SNMP, allowing a network administrator to access Link150 remotely with an SNMP manager and view the networking status and diagnostics of the Link150 in the MIB-II format.

Step	Action	Result
1	Enter the IP address of SNMP Manager One .	Enters the IP address of SNMP manager one.
2	Enter the IP address of SNMP Manager Two .	Enters the IP address of SNMP manager two.
3	Enter the name of the SNMP System Contact person.	Enters the name of SNMP system contact person.
4	Enter the System Name .	Enters the system name.
5	Enter the SNMP System Location .	Enters the system location.
6	Enter the SNMP Read-only Community Name .	public (Factory setting)
7	Enter the SNMP Read-write Community Name .	private (Factory setting)
8	Enter the Trap information to configure and trap the community name.	alert (Factory setting)
9	Click Apply .	Updates and saves the SNMP setting.

Enabled Traps

Enabled Traps allows you to select any of the following traps, which are disabled by default:

Parameter	Description
Coldstart Trap	Generates a trap when the Link150 is powered ON.
Warmstart Trap	Generates a trap when SNMP is enabled.
Linkdown Trap	Generates a trap when an Ethernet port communication link is disconnected.
Linkup Trap	Generates a trap when an Ethernet port communication link is reconnected.
Authentication Failure Trap	Generates a trap when an SNMP manager is accessing the Link150 with incorrect authentication.

Advanced Services Control

Industrial Protocol

Parameter	Description	Setting
Enable Modbus/TCP	Allows you to enable or disable the Modbus/TCP service.	- Enabled (Factory Setting) - Disabled
ION Pass Through	Allows you to enable or disable the ION Pass Through service.	- Enabled - Disabled (Factory Setting)

NOTE:

- It is possible to enable only one protocol at a time, either Modbus/TCP or ION protocol.
- When you change the protocol, the device restarts. You need to refresh the browser window to see the changes.
- When the ION protocol is enabled, the following webpages are removed:
 - Diagnostics → Device Health Check → Read Device Registers
 - Configuration & Settings → Network Configuration → Advanced Ethernet Settings
 - Configuration & Settings → Network Configuration → MBTCP/IP Filtering
 - Configuration & Settings → Device Configuration → Device List

Services Configuration

In both HTTP/Web and Modbus/TCP, Port 20 is not allowed. The port numbers cannot be duplicated among the HTTP/Web and Modbus/TCP ports.

Parameter	Description	Setting
Enable FTP server	Allows you to enable/disable the FTP service.	- Enabled (Factory setting) - Disabled
Enable device announcement	Allows you to enable or disable the DPWS service.	- Enabled (Factory setting) - Disabled
Enable SNMP	Allows you to enable or disable the SNMP service.	- Enabled - Disabled (Factory Setting)

HTTP/Web

Parameter	Description	Setting
Port	Allows you to enter the port number for HTTP/Web messages. NOTE: Avoid using the port numbers reserved for protocols other than HTTP as some browsers block them. For more details, refer Troubleshooting (see page 95).	1-65534 80 (Factory setting)

Modbus/TCP

Parameter	Description	Setting
Port	Allows you to enter the port number for Modbus/TCP. NOTE: The Modbus/TCP parameter gets enabled only when the Enable Modbus/TCP parameter is selected in Industrial protocols under Advanced Services Control page.	1-65534 502 (Factory setting)

NOTE: Only an administrator can change the port numbers for HTTP/Web and Modbus/TCP.

NOTE: Clicking the **Defaults** button loads the default values of the port numbers in the page. Click **Apply** to save the defaults.

NOTE: Port 20 is not allowed in HTTP/Web and Modbus/TCP.

User Accounts

Description

The Link150 users are assigned user names and passwords. Each user belongs to a group, and each group has access rights to the Link150 web pages assigned by the Link150 administrator.

There are two pre-defined user accounts:

- **Administrator** (default password is **Gateway**)
- **Guest** (default password is **Guest**)

 WARNING	
POTENTIAL COMPROMISE OF SYSTEM AVAILABILITY, INTEGRITY, AND CONFIDENTIALITY	
Change default passwords at first use to help prevent unauthorized access to device settings, controls, and information.	
Failure to follow these instructions can result in death, serious injury, or equipment damage.	

Groups

To change the group name, type a new name in one of the groups text boxes.

NOTE: The Administrator group name cannot be changed.

Users

In addition to the two default user accounts, you can create up to 11 user accounts.

Parameter	Description
Name	Enter a name (1 to 15 characters) for a new user. NOTE: User names is case-sensitive and can contain special characters.
Password	Enter a password (0 to 11 characters) for a new user. NOTE: Password is case-sensitive.
Email Id	Enter a valid email address for the selected name. NOTE: Enter the email domain name in lower case.
Group	Select a group for the new user.
Language	Select the default language for the new user.

Link150 Accounts and Passwords

Accounts	Password
Administrator	Gateway NOTE: Gateway is the default password. It can also be used as a user-defined password.
Guest	Guest NOTE: Guest is the default password. This password is configurable and it can have a maximum of 11 characters.
User-defined accounts (11 accounts possible)	User-defined passwords

Webpage Access

Webpage Logout Time

You can set the idle time to logout from the webpage. The idle time should be 0–20 min and the default value is 5 min.

NOTE: If the idle time is set to 0, then the logout feature will be disabled.

Group Access

Webpage Access allows you to define the pages to which each group has access. You must be an Administrator to configure Webpage Access.

Group	Access
Administrator	Full access to all webpages. Access cannot be edited. NOTE: We recommend changing default administrator password for system security the first time you log in.
Guest	No access to the selected webpages.
User-defined groups	Choosing from the following options, the administrator assigns webpage access to each group. The access levels are as follows: ● None: A group has no access to the selected webpage ● Read-Only: The password grants a group read-only permission to the selected webpage ● Full: A group has the same access as the administrator group to the selected webpage NOTE: ● For Advanced Ethernet Settings, the default access is read-only. ● Temporary access of read only or full can be granted and removed.

Section 2.3

Link150 Web Server - Diagnostics Pages

What Is in This Section?

This section contains the following topics:

Topic	Page
Statistics for Modbus/TCP and ION Protocols	50
Device Information	53
Read Device Registers	54

Statistics for Modbus/TCP and ION Protocols

Description

This page shows the readings accumulated since the Link150 was last activated. If the power to the Link150 is terminated or the device is reset due to a configuration change or other event, all cumulative values are reset to 0.

Reset Procedure

Step	Action	Result
1	From the Link150 menu bar, click Diagnostics .	Opens the Diagnostics menu.
2	From the Diagnostics menu, in the General submenu, click Statistics .	Opens the Statistics page and displays the statistics for each group.
3	Click Reset Counters .	Resets the Link150 cumulative diagnostic data to 0.

Interpreting Ethernet Statistics

Global Statistic	Description
Transmitted Frames	Number of frames transmitted
Collisions	A counter that increments each time a frame is retransmitted due to collision detection.
Excessive Collisions	A counter that increments each time a frame is not able to be sent due to reaching the maximum collision status based on the Truncated Binary Exponential Backoff algorithm.
Received Frames	Number of frames received
CRC Errors	A counter that increments each time a frame is received that has a checksum/CRC that does not match what is calculated.
Alignment Errors	A counter that increments each time a frame is received that has a checksum/CRC error and does not end on an 8-bit frame boundary.
Frames Too Long	A counter that increments each time a frame is received that is larger than the allowed maximum size defined in the standards (frames larger than 1518 bytes).
Frames Too Short	A counter that increments each time a frame is received that is smaller than the allowed minimum size defined in the standards (frames smaller than 64 bytes).

Statistic Per Port	Description
Link Speed	Operational speed (10 Mbps or 100 Mbit/s)
Duplex mode	Current mode of operation (full duplex or half duplex)

Interpreting Modbus Serial Statistics

Statistic	Description
Transmitted messages	A counter that increments each time a frame is sent.
Received messages	A counter that increments each time a frame is received.
Error messages ⁽¹⁾	An error marked from the slave or the response timeout.
Outbound Read Messages ⁽²⁾	A counter that increments each time a read request message is sent.
Outbound Write Messages ⁽²⁾	A counter that increments each time a write request message is sent.
Inbound Read Messages ⁽³⁾	A counter that increments each time a read request message is received.
Inbound Write Messages ⁽³⁾	A counter that increments each time a write request message is received.

(1) This parameter is not available for ION protocol.

(2) Available when the device is in master mode.

(3) Available when the device is in slave mode.

Interpreting Date and Time Statistics

Statistic	Description
Date	Current date
Time	Current time
Uptime	Run time after the system power-up

Interpreting Modbus TCP/IP Statistics

NOTE: The following table is not applicable for ION protocol.

Statistic	Description
Port status	Status of the connected Ethernet port
Opened TCP connections ¹	Number of active connections NOTE: This parameter is not available for slave mode statistics.
Received messages	Number of messages received
Transmitted messages	Number of messages transmitted
Reset counters	Resets the received and transmitted messages NOTE: This parameter is not available for slave mode statistics.
(1) Available when the device is in master mode.	

Interpreting System Statistics

Statistic	Description
CPU	Status of the CPU: ● Nominal ● Degraded ● Out of service
Boot Memory	Healthiness of the boot memory: ● Nominal ● Degraded ● Out of service
EEPROM	Healthiness of EEPROM: ● Nominal ● Degraded ● Out of service
File System	Healthiness of the file system: ● Nominal ● Degraded ● Out of service
Ethernet PHY 1	Healthiness of PHY 1 hardware: ● Nominal ● Degraded ● Out of service
Ethernet PHY 2	Healthiness of PHY 2 hardware: ● Nominal ● Degraded ● Out of service
DDR	Healthiness of the execution memory: ● Nominal ● Degraded ● Out of service

Interpreting TCP Port Connections Statistics

Statistics	Description
Remote IP	Remote IP address
Remote port	Remote port number
Local port	Local port number
Transmitted messages	Number of messages transmitted
Received messages	Number of messages received
sent errors	Number of error messages sent
Reset Counters	Resets the transmitted and received messages

NOTE:

- Statistics on TCP port connections are not available for slave mode.
- Remote IP connection displays only MODBUS TCP Clients IP addresses. It does not show the IP addresses of the Webserver connections.

Device Information

Description

This page shows the details of Link150. The details are device name, product name, serial number, firmware version, unique identifier, MAC address, IPv4 address, IPv6 link local address, and manufacture date.

Device Name Configuration Procedure

Step	Action	Result
1	From the Link150 menu bar, click Diagnostics .	Opens the Diagnostics page.
2	In the Product Information submenu, click Device Information .	Opens the Device Information page.

List of Parameters in Device Information

Parameter	Description
Device Name	Device name which is assigned in Configuration & Settings → Device Location/Name → Device Name .
Product name	Name of the device type
Serial number	Device serial number
Model number	Device model number
Firmware version	Current firmware version
Unique Identifier	Combination of MAC address and the time
MAC address	Unique MAC address
IPv4 address	Addressing scheme to specify the source and destination addresses
IPv6 link local address	Address used to communicate on the local network
Manufacture date	Date when the device was manufactured

Read Device Registers

Description

This page allows the Link150 to read Modbus registers from the selected device.

Read Procedure

Step	Action	Result
1	On the Link150 menu bar, click Diagnostics .	Opens the Diagnostics menu.
2	In the Device Health Check submenu, click Read Device Registers .	Opens the Read Device Registers page.
3	Select the device from the Device Name list.	Selects the device from the list.
4	Enter Local ID (or choose from the defined device list), Starting Register , and then Number of Registers .	Enters the registers to read from the specified device. NOTE: The Local ID parameter is disabled in slave mode.
5	Select the Data Type .	Selects the appropriate data type.
6	To change how Modbus data is displayed in the Value column, select Decimal , Hexadecimal , Binary , or ASCII .	Selects how the data values are displayed.
7	Click Read .	Reads the device register according to the selected configuration.

Link150 Read Device Register Parameters

Parameter	Description	Settings
Device Name	Selects a device to read from the list of previously added devices. NOTE: When the device is in slave mode, the Read button is available only after you select a name from the Device Name list.	-
Local ID	The address (Local ID) of the device that is to be read. NOTE: The Local ID parameter is disabled in slave mode.	1
Starting Register	Register number in decimal.	0–65535 1000 (Factory setting)
Number of Registers	The number of registers to read.	1–125 10 (Factory setting)
Register	Lists the register numbers in decimal.	-
Value	Lists the data stored for a register. Values retrieved depend on the device connected to the Link150. Refer to the documentation for the connected device for more information about stored register values.	-
Data Type	Lists the data types available for the device.	Holding Registers (Factory setting) Input Registers Input Coils Output Coils
Decimal, Hexadecimal, Binary, ASCII options	Selects an option to specify how the Value column data is displayed.	Decimal (Factory setting)

Chapter 3

Link150 Web Server (From Firmware Version 5.1.15)

What Is in This Chapter?

This chapter contains the following sections:

Section	Topic	Page
3.1	Ethernet Gateway Link150	58
3.2	Link150 Web Server - Home Page	66
3.3	Link150 Web Server - Diagnostics Pages	69
3.4	Link150 Web Server - Maintenance Page	77
3.5	Link150 Web Server - Settings Pages	78

Section 3.1

Ethernet Gateway Link150

What Is in This Section?

This section contains the following topics:

Topic	Page
Access to Link150 Webpages	59
Link150 User Interface Layout	62
Link150 Webpage Description	64

Access to Link150 Webpages

Supported Web Browsers

Browser	Version with Windows XP	Version with Windows Vista	Version with Windows 7
Internet Explorer	IE 8.0	IE 9.0	IE 10.0
Firefox	15.0	20.0	20.0
Chrome (recommended)	24.0 and later	24.0 and later	24.0 and later

First Access to the Link150 Webpages

The Link150 name should be configured during the first access to the Link150 webpages.

 WARNING
POTENTIAL COMPROMISE OF SYSTEM AVAILABILITY, INTEGRITY, AND CONFIDENTIALITY Change default passwords at first use to help prevent unauthorized access to device settings, controls, and information. Failure to follow these instructions can result in death, serious injury, or equipment damage.

The procedure to access the Link150 webpages for the first time depends on the operating system of a computer:

- Windows Vista, Windows 7, or newer operating systems
- Windows XP or older operating systems

NOTE:

- The LINK150 device has a self-signed security certificate and by default it is in HTTPS enabled mode. Therefore, connecting to the LINK150 interface displays a security message. Before accepting, confirm that communication with the LINK150 has been established.
- HTTPS Redirection is enabled by default. It is recommended to leave this setting enabled to secure communications between PC and the LINK150.

First Access Through PC with Windows 7, Windows Vista, or Newer Operating Systems

Step	Action
1	Disconnect the PC from the local area network (LAN) and switch off Wi-Fi if any.
2	Connect an Ethernet cable from the computer to the Link150 or to the Ethernet switch inside the panel. NOTE: Perform this action when the device goes to fallback ip.
3	Open web browser.
4	Click Network and the Link150-XXYYZZ appears in the list of devices. NOTE: If the Link150-name is not displayed in the list of devices in Windows Explorer , verify that the PC Link150 are connected through the router.
5	Double-click the selected Link150-XXYYZZ . The login page automatically opens in the browser. NOTE: • If the Link150 device is not discovered by the PC, then enter the IP address manually. • YY.ZZ are the last 2 bytes of the Link150 MAC address (to be found on the Link150 device side label). For example, A Link150 with MAC address 00-B0-D0-86-BB-F7 (hexadecimal) or 0-176-208-134-187-247 (decimal), set the IP address as 169.254.187.247 in the batch file.
6	Enter Administrator as the user name and Gateway as the password. The home page opens in the browser. NOTE: The user name and password are case-sensitive. The Administrator user name cannot be changed as it is a default user name for administrator role.
7	To change the default password, click Change Password under Administrator user name. The Password Modification page is displayed.
8	Enter Old Password , Password , and Confirm Password , and then click Apply Changes .
9	To locate the Link150-XXYYZZ, select the Home menu, go to Device Physical Location submenu, and then turn ON the Identify Device toggle key. The RS485 LED of the selected Link150-XXYYZZ blinks for 15 seconds with 1 s ON and 1 s OFF (test mode).

Step	Action
10	To name the Link150-XXYYZZ , select the Settings menu, go to General submenu, click Identification , go to Device Identification , and then enter Link150-XXYYZZ in User Application Name box and click Apply Changes to set the Link150 name.
11	Write the Link150 name on a blank device name label and stick it on the existing one.

NOTE:

- Follow the preceding procedure when link150 goes to fallback IP due to duplicate IP detection or due to any other case.
- XXYYZZ are the last 3 bytes of the MAC address in hexadecimal format.
- Check the firewall settings if DPWS is not enabled.

First Access Through PC with Windows XP or Older Operating Systems

Step	Action
1	Disconnect your local computer from all networks (LAN) and switch off Wi-Fi if any.
2	Connect an Ethernet cable from the computer to the Link150. NOTE: Perform this action when the device goes to fallback ip.
3	Start Internet Explorer 8, Mozilla Firefox 15, Chrome 24 (or later versions). NOTE: The computer automatically uses the default 169.254.## (##=0–255) and the default subnet mask 255.255.0.0.
4	In the address box, type 169.254.YY.ZZ, where YY and ZZ are the last 2 bytes of the Link150 MAC address (found on the Link150 side label), and then press Enter . The home page opens in the browser. Example: For the Link150 with the MAC address 00-B0-D0-86-BB-F7 or 0-176-208-134-187-247 in decimal, type 169.254.187.247 in the address box.
5	Press Enter , the login page automatically opens in the browser.
6	Enter Administrator as the user name and Gateway as the password. The home page opens in the browser. NOTE: The user name and password are case-sensitive. The Administrator user name cannot be changed as it is a default user name for administrator role.
7	To change the default password, click Change Password under Administrator user name. The Password Modification page is displayed.
8	Enter Old Password , Password , and Confirm Password , and then click Apply Changes .
9	To locate the Link150-XXYYZZ, select the Home menu, go to Device Physical Location submenu, and then turn ON the Identify Device toggle key. The RS485 LED of the selected Link150-XXYYZZ blinks for 15 seconds with 1 s ON and 1 s OFF (test mode).
10	To name the Link150-XXYYZZ , select the Settings menu, go to General submenu, click Identification , go to Device Identification , and then enter Link150-XXYYZZ in User Application Name box and click Apply Changes to set the Link150 name.
11	Write the Link150-name on a blank device name label and stick it on the existing one.

NOTE:

- Follow the preceding procedure when link150 goes to fallback IP due to duplicate IP detection or due to any other case.
- XXYYZZ are the last 3 bytes of the MAC address in hexadecimal format.

Access to Webpages

Follow the Network Discovery, Name Browsing, and IP Address Browsing process to access the webpages.

Webpage access depends on the IT infrastructure.

Network Discovery

Follow the below procedure to access the Link150 webpages after the Link150 name has been configured.

Step	Action
1	Connect the Link150 or the Ethernet switch inside the panel to the local area network (LAN).
2	Connect the computer to the local area network (LAN).
3	Click Network . The Link150-name gets displayed in the list of devices. NOTE: If the Link150-name is not displayed in the list of devices in Windows Explorer . Verify that the PC Link150 are connected through the router.
4	Double-click the Link150-name. The login page automatically opens in the browser.

NOTE: The preceding procedure is applicable for windows vista, windows 7 or later

Name Browsing

DNS server is mandatory to browse by name. For more details about DNS, refer to DNS ([see page 36](#)).

Step	Action
1	Connect the Link150 or the Ethernet switch inside the panel to the local area network (LAN).
2	Connect the computer to the local area network (LAN).
3	Start the web browser.
4	In the address box, type the Link150-name that is written on the sticker located on the front face of the selected Link150.
5	Press Enter and the login page automatically opens in the browser. NOTE: If the Link150-name does not appear in the list of devices in Windows Explorer . Verify that the PC Link150 are connected through the router.

IP Address Browsing

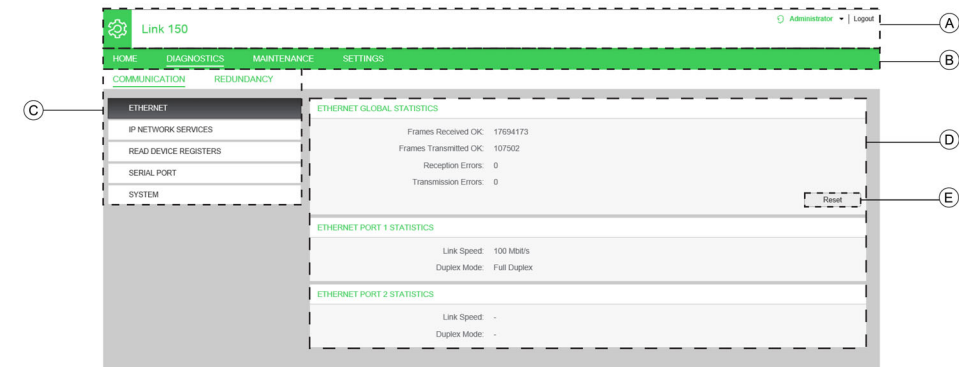
In IP Address Browsing, IP configuration can be done manually or it gets configured through DHCP or BootP.

Step	Action
1	Connect the Link150 or the Ethernet switch inside the panel to the local area network (LAN).
2	Connect the computer to the local area network (LAN).
3	Start the web browser.
4	In the address box, enter the IP address given by the IT administrator.
5	Press Enter and the login page automatically opens in the browser. NOTE: If the login page in the web browser does not open or does not display correctly, verify the path. For example: In the Internet Explorer browser, verify that Internet Explorer\Tools\Compatibility View Settings\Display Intranet sites in Compatibility View are checked.

Link150 User Interface Layout

Overview

This graphic shows the Link150 user interface layout.



- A Banner
- B Main Tabs
- C Sub Tabs
- D Display Zone
- E Action Buttons

Banner

The banner displays the following information at the top of all the pages.

Generic information	Description
User name	Name of the user who has logged in
Logout	To log out the Link150 session, click Logout or close your browser. It is recommended to log out from the Link150 when it is not in use.

Main Tabs

The main tabs are:

- Home
- Diagnostics
- Maintenance
- Settings

Sub Tabs

The sub tabs display the sub menus under the selected main tab.

Action Buttons

The action buttons correspond to the selected tab.

The following table describes the interface buttons:

Button	Action
Apply Changes	Applies the changes.
Cancel Changes	Cancels the modifications to return to the last saved settings.
Reset	Resets the values to factory settings. Values in all the fields of the selected sub tab are reset to 0
Read	Allows Link150 to read the Modbus registers from the selected device, according to the selected configuration.
Default	Restores the values that are manually changed in Settings → Communication → Advanced Ethernet Settings to the default values. For example, if you change the default value of Time to Live from 60 Hops to 70 Hops, clicking Default will restore the value to 60.
Upgrade	Upgrades the Link150 firmware to the selected version, from the Maintenance tab.

Button	Action
Add User, Import, Export	Lets you add new users, and import/export users created in XML format, from Settings → User Management sub tab.

Display Zone

The display zone shows the selected sub tab in detail with all related fields.

Link150 Webpage Description

Home Tab

Webpage for the **Home** tab displays the following fields:

Field	Description
Device Identification (see page 67)	Lists the following information about Link150 : • User Application Name • Product Range • Product Model • Serial Number • Firmware Revision • Unique Identifier • MAC Address • IPv4 Address • IPv6 Link-local Address • Manufacture Date
Device Physical Location (see page 68)	Locates the Link150-XXYYZZ when you turn ON the Identify Device toggle key. The RS485 LED of the selected Link150-XXYYZZ blinks for 15 seconds with 1 s ON and 1 s OFF (test mode.)

Diagnostics Tab

Webpage for the **Diagnostics** tab contains the following sub tabs:

Diagnostics Sub Tab	Navigation Menu Webpage	Description
Communication	Ethernet (see page 70)	Displays the following Ethernet statistics for troubleshoot network-related issues: • Ethernet Global Statistics (Click Reset to restore the values to factory settings. • Ethernet Port 1 Statistics • Ethernet Port 2 Statistics
	IP Network Services (see page 71)	Displays the diagnostic data for Modbus TCP/IP clients connected to the Link150.
	Read Device Registers (see page 72)	Displays register data for devices connected locally to the Link150.
	Serial Port (see page 73)	Displays the diagnostic data for the devices connected to the serial port. Click Reset to restore the values to factory settings.
	System (see page 74)	Displays the status of system statistics.
Redundancy	RSTP Bridge (see page 75)	Displays the diagnostic data of RSTP bridge.
	RSTP Ports (see page 76)	Displays the diagnostic data of RSTP ports.

Maintenance Tab

The **Maintenance** tab displays the **Firmware Upgrade** webpage.
(see page 77)

Settings Tab

Webpage for the **Settings** tab contains the following sub tabs:

Settings Sub Tab	Navigation Menu Webpage	Description
General	Device Identification (see page 79)	Configures the Link150 User Application Name.
	Date/Time (see page 80)	Enables the user to manually set the date and time.
Communication	Ethernet Configuration (Dual Port) (see page 81)	Configures the Ethernet ports.
	IP Configuration (see page 82)	Configures the IP parameters including IPv4, IPv6, and DNS settings.
	Serial Port (see page 84)	Configures serial communication parameters.
	Device List (see page 86)	Configures the Modbus devices.
	IP Network Services (see page 89)	Enables or disables the IP network services parameters.
	Modbus TCP/IP Filtering (see page 90)	Configures the maximum number of Modbus TCP/IP client connections. Configures the IP addresses that can access the Link150 through Modbus TCP/IP.
	SNMP (see page 91)	Configures Simple Network Management Protocol (SNMP).
	Advanced Ethernet Settings (see page 92)	Configures the advanced Ethernet settings.
Redundancy	RSTP (see page 93)	Displays the diagnostic data of RSTP.
User Management	User Accounts (see page 94)	Manages the existing and newly added user accounts.

Section 3.2

Link150 Web Server - Home Page

What Is in This Section?

This section contains the following topics:

Topic	Page
Device Identification	67
Device Physical Location	68

Device Identification

Description

This page shows the details of Link150. The details are user application name, product range, product model, serial number, firmware revision, unique identifier, MAC address, IPv4 address, IPv6 link local address, and manufacture date.

Device Identification Procedure

Step	Action	Result
1	From the Link150 menu bar, select Settings .	Opens the Settings menu.
2	From the Settings menu, in the General submenu, click Identification .	Displays the Device Identification details.
3	Enter the Link150 name in the User Application Name box, and click Apply Changes .	Changes the User Application Name (Device Name).

List of Parameters in Device Identification

Parameter	Description
User Application Name	Device name that is assigned by the user.
Product Range	Name of the device type.
Product Model	Device model number.
Serial Number	Device serial number.
Firmware Revision	Current firmware version.
Unique Identifier	Combination of MAC address and the time.
MAC Address	Unique MAC address.
IPv4 Address	Addressing scheme to specify the source and destination addresses.
IPv6 Link-local Address	Address used to communicate on the local network.
Manufacture Date	Date when the device was manufactured.

Device Physical Location

Device Locating Procedure

Step	Action	Result
1	From the Link150 menu bar, click Home .	Opens the Home webpage.
2	In the Device Physical Location section, click ON for the Identify Device toggle key.	Locates the Link150-XXYYZZ. The RS485 LED of the selected Link150- XXYYZZ blinks for 15 seconds with 1 s ON and 1 s OFF (test mode.)

NOTE: This functionality temporarily overrides the LED blinking pattern of Modbus RS485 communication (if this communication exists).

Section 3.3

Link150 Web Server - Diagnostics Pages

What Is in This Section?

This section contains the following topics:

Topic	Page
Ethernet	70
IP Network Services	71
Read Device Registers	72
Serial Port	73
System	74
RSTP Bridge	75
RSTP Ports	76

Ethernet

Description

This page shows the Ethernet readings accumulated since the Link150 was last activated. If the power to the Link150 is terminated or the device is reset due to a configuration change or other event, all cumulative values are reset to 0.

Reset Procedure

Step	Action	Result
1	From the Link150 menu bar, click Diagnostics .	Opens the Diagnostics menu.
2	From the Diagnostics menu, in the Communication submenu, click Ethernet .	Displays the Ethernet statistics
3	Click Reset in the Ethernet Global Statistics section.	Resets the Link150 cumulative diagnostic data to 0.

Interpreting Ethernet Statistics

Ethernet Statistic	Description
Frames Transmitted OK	Number of frames transmitted
Frames Received OK	Number of frames received
Reception Errors	Number of errors frame during reception
Transmission Errors	Number of errors frame during transmission

Statistic Per Port	Description
Ethernet Port 1 and 2 Statistics	
Link Speed	Operational speed (10 Mbps or 100 Mbit/s)
Duplex mode	Current mode of operation (full duplex or half duplex)

IP Network Services

Description

This page displays the diagnostic data for Modbus TCP/IP clients connected to the Link150.

Modbus TCP Diagnostic Data Display Procedure

Step	Action	Result
1	From the Link150 menu bar, click Diagnostics .	Opens the Diagnostics menu.
2	From the Diagnostics menu, in the Communication submenu, click IP Network Services .	Displays the Modbus TCP port statistics.
3	Click Reset in the ModbusTCP Port Connections section.	Resets the Link150 number of messages and errors to 0.

Interpreting Modbus TCP Port Statistics

NOTE: The following table is not applicable for ION protocol.

Statistic	Description
Port status	Status of the connected Ethernet port
Opened TCP connections ¹	Number of active connections NOTE: This parameter is not available for slave mode statistics.
Received messages	Number of messages received
Transmitted messages	Number of messages transmitted
(1) Available when the device is in master mode.	

Interpreting ModbusTCP Port Connections Statistics

Statistics	Description
Remote IP	Remote IP address
Remote port	Remote port number
Local port	Local port number
Transmitted messages	Number of messages transmitted
Received messages	Number of messages received
sent errors	Number of error messages sent
Reset	Resets the transmitted messages, received messages, and sent errors

NOTE:

- Statistics on TCP port connections are not available for slave mode.
- Remote IP connection displays only MODBUS TCP Clients IP addresses. It does not show the IP addresses of the Webserver connections.

Read Device Registers

Description

This page allows the Link150 to read Modbus registers from the selected device.

Read Procedure

Step	Action	Result
1	On the Link150 menu bar, click Diagnostics .	Opens the Diagnostics menu.
2	From the Diagnostics menu, in the Communication submenu, click Read Device Registers .	Opens the Read Device Registers page.
3	Select the device from the Device Name list.	Selects the device from the list.
4	Enter Local ID (or choose from the defined device list), Starting Register , and then Number of Registers .	Enters the registers to read from the specified device. NOTE: The Local ID parameter is disabled in slave mode.
5	Select the Data Type .	Selects the appropriate data type.
6	To change how Modbus data is displayed in the Value column, select Decimal , Hexadecimal , Binary , or ASCII .	Selects how the data values are displayed.
7	Click Read .	Reads the device register according to the selected configuration.

Link150 Read Device Register Parameters

Parameter	Description	Settings
Device Name	Selects a device to read from the list of previously added devices. NOTE: When the device is in slave mode, the Read button is available even if a name is not selected from the Device Name list.	-
Local ID	The address (Local ID) of the device that is to be read. NOTE: The Local ID parameter is disabled in slave mode.	1 (Factory setting)
Starting Register	Register number in decimal.	0–65535 1000 (Factory setting)
Number of Registers	The number of registers to read.	1–125 10 (Factory setting)
Register	Lists the register numbers in decimal.	-
Value	Lists the data stored for a register. Values retrieved depend on the device connected to the Link150. Refer to the documentation for the connected device for more information about stored register values.	-
Data Type	Lists the data types available for the device.	Holding Registers (Factory setting) Input Registers Input Coils Output Coils
Decimal, Hexadecimal, Binary, ASCII options	Selects an option to specify how the Value column data is displayed.	Decimal (Factory setting)

Serial Port

Description

This page displays the diagnostic data for the devices connected to the serial port.

Serial Port Reset Procedure

Step	Action	Result
1.	From the Link150 menu bar, click Diagnostics .	Opens the Diagnostics menu.
2.	From the Diagnostics menu, in the Communication submenu, click Serial Port .	Displays the transmitted, received, and error messages.
3.	Click Reset .	Resets the number of messages to 0.

Serial Port Parameters

Parameter	Description	Settings
Transmitted Messages	Number of messages transmitted.	
Received Messages	Number of messages received.	
Error Messages	Number of error messages displayed.	
Reset	Resets the transmitted, received, and error messages.	

System

Description

This page displays the status of system statistics.

Displaying System Statistics Procedure

Step	Action	Result
1	From the Link150 menu bar, click Diagnostics .	Opens the Diagnostics menu.
2	From the Diagnostics menu, in the Communication submenu, click System .	Displays the System statistics

Interpreting System Statistics

Statistic	Description
CPU	Status of the CPU: ● Nominal ● Degraded ● Out of service
Boot Memory	Healthiness of the boot memory: ● Nominal ● Degraded ● Out of service
EEPROM	Healthiness of EEPROM: ● Nominal ● Degraded ● Out of service
File System	Healthiness of the file system: ● Nominal ● Degraded ● Out of service
Ethernet PHY 1	Healthiness of PHY 1 hardware: ● Nominal ● Degraded ● Out of service
Ethernet PHY 2	Healthiness of PHY 2 hardware: ● Nominal ● Degraded ● Out of service
DDR	Healthiness of the execution memory: ● Nominal ● Degraded ● Out of service

RSTP Bridge

Description

This page displays the diagnostic data of RSTP bridge.

RSTP Bridge Configuration Procedure

Step	Action	Result
1	From the Link150 menu bar, click Diagnostics .	Opens the Diagnostics menu.
2	From the Diagnostics menu, in the Redundancy submenu, click RSTP Bridge .	Opens the RSTP Bridge page.

General Parameters

Parameter	Description	Setting
Bridge Status	Status of RSTP feature. It is either enabled or disabled based on the configuration.	Enabled Disabled (Factory Setting)
Bridge ID	Unique identifier of this Bridge. It is a combination of MAC address and Bridge Priority of this device.	<Priority><MAC Address>
Root ID	Unique identifier of the Root Bridge. Combination of MAC address and Root Bridge Priority of the Root device	<Priority><MAC Address>
Root Port	The port number of the port that offers the lowest cost path from this bridge to the root bridge. NOTE: For the Root Bridge, the value is always 0. For other devices, either 1 or 2.	1 or 2 - no root port
Root Path Cost	The cost of the path to the root as seen from this bridge.	0 - 4294967295
Total Topology Changes	Total number of topology changes detected by this bridge since the last reset counters.	0 - 4294967295

Configured/Learned Parameters

Parameter	Description	Setting
Configured Bridge Hello Time	The value of Hello Time configured at this Bridge.	1 – 2 s Default setting: 2 s
Learned Bridge Hello Time	The actual Hello Time used by the bridge currently. This is the configured Hello Time of the Root Bridge.	0 - 255 s
Configured Bridge Forward Delay	The value of Forward Delay configured at this Bridge.	4 - 30 s Default setting: 21 s
Learned Bridge Forward Delay	The actual Forward Delay used by the bridge currently. This is the configured Forward Delay of the Root Bridge.	0 - 255 s
Configured Bridge Max Age Time	The value of Max Age Time configured at this Bridge.	6 - 40 s Default setting: 40 s
Learned Bridge Max Age Time	The actual Max Age Time used by the bridge currently. This is the configured Max Age Time of the Root Bridge.	0 - 255 s

RSTP Ports

Description

This page displays the diagnostic data of RSTP ports.

RSTP Configuration Procedure

Step	Action	Result
1	From the Link150 menu bar, click Diagnostics .	Opens the Diagnostics menu.
2	From the Diagnostics menu, in the Redundancy submenu, click RSTP Ports .	Opens the RSTP Ports page.

Port 1 and 2 Parameters

Parameter	Description	Setting
State	Current state of the port. By default, it is disabled, blocking, and forwarding. NOTE: Other states like listening, learning are intermediate states which are not visible to the user.	0 to disable RSTP 1 to enable RSTP Default setting: 0
Role	Current role of the port in the ring. If the port state is disabled, the role can be either Root or Designated. If the port state is disabled (Ethernet link is down) then the Role is Unknown.	-
Priority	The value of the port priority is contained in Port Identifier. All ports of a bridge will have a port identifier with format: [1 byte port number][1 byte port priority]. NOTE: The below points are provided for understanding the usage of port priority (port identifier). - Port that carries packets to root bridge is root port. When there are multiple such ports exist, one with least Port Identifier becomes the root port, and others will become alternate ports. - Port Number: Port number cannot be configured. In the device the port Number (interface number) for port-1 is 1 and port number for port-2 is 2.	0 - 240 (in steps of 16) Default setting: 128
Port Path Cost	The contribution of this port to the path cost of paths towards the Root bridge which includes this port.	For Auto mode, the default value of the port path cost changes based on the Link Speed. i.e for 100 mbps the default value is 200000 and for 10 mbps the default value is 2000000. These are the speeds supported by the device.
Received RST (BPDUs)	Total number of RSTP BPBUs received by this port since the last reset counters.	-
Transmitted RST (BPDUs)	Total number of RSTP BPBUs transmitted by this port since the last reset counters.	-
Received TCN (BPDUs)	Total number of Topology Change BPBUs received by this port since the last reset counters.	-
Transmitted TCN (BPDUs)	Total number of Topology Change BPBUs transmitted by this port since the last reset counters.	-

Section 3.4

Link150 Web Server - Maintenance Page

Firmware

Firmware Upgrade

Verify the **Link150** firmware version (*see page 19*) before upgrading to the latest version.

For firmware upgrade procedure, refer Standard Firmware Upgrade Process (Upgrade from Version 5.1.15 or Later) (*see page 19*).

Section 3.5

Link150 Web Server - Settings Pages

What Is in This Section?

This section contains the following topics:

Topic	Page
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IP Configuration	82
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Device List	86
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SNMP	91
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Identification

Description

This page displays the details of Link150. The details are user application name, product range, product model, serial number, firmware revision, unique identifier.

Date and Time Configuration Procedure

Step	Action	Result
1	From the Link150 menu bar, click Settings .	Opens the Settings menu.
2	From the Settings menu, in the General submenu, click Identification .	Displays the Device Identification details.
3	Enter the Link150 name in the User Application Name box, and click Apply Changes .	Changes the User Application Name (Device Name.)

Device Identification Parameters

Parameter	Description
User Application Name	Device name that is assigned by the user.
Product Range	Name of the device type.
Product Model	Device model number.
Serial number	Device serial number.
Firmware Revision	Current firmware version.
Unique Identifier	Combination of MAC address and the time.

Date and Time

Description

This page allows to enter the local date and time manually.

NOTE: As there is no SNTP or RTC, the date or time needs to be reset in the event of power loss.

Date and Time Configuration Procedure

Step	Action	Result
1	From the Link150 menu bar, click Settings .	Opens the Settings menu.
2	From the Settings menu, in the General submenu, click Date/Time .	Displays the Date and Time.
3	Enter Date and Time .	Enters the current date and current time.
4	Click Apply Changes .	Updates current date and time of Link150.

Date and Time Parameters

Parameter	Description	Setting
Date (yyyy/mm/dd)	Allows you to set the present date.	Date format: yyyy/mm/dd
Time (hh:mm:ss)	Allows you to set the present time.	Time format: hh:mm:ss

Ethernet Configuration (Dual Port)

Description

This page allows to configure the Ethernet ports.

Ethernet Ports Configuration Procedure

Step	Action	Result
1	From the Link150 menu bar, click Settings .	Opens the Settings menu.
2	From the Settings menu, in the Communication submenu, click Ethernet Configuration (Dual Port) .	Displays the Ethernet port settings options.
3	Select frame format, speed and mode for Ethernet port 1 and port 2, and protection level.	Selects the Ethernet port options.
4	Click Apply Changes .	Updates the Ethernet port settings of Link150.

Ethernet

Parameter	Description	Settings
MAC address	A unique media access control address of the Link150. The MAC address is printed on the side label of the Link150.	-
Frame format	Used to select the format for data sent over an Ethernet connection.	• Ethernet II • 802.3 • Auto (Factory setting)

Ethernet Port 1 Control

Parameter	Description
Speed and Mode	Allows to select different speed and transmission mode. For the auto-negotiation option, the Link150 automatically negotiates the physical Ethernet connection speed and transmission mode for Ethernet port 1.

Ethernet Port 2 Control

Parameter	Description
Speed and Mode	Allows to select different speed and transmission mode. For the auto-negotiation option, the Link150 automatically negotiates the physical Ethernet connection speed and transmission for Ethernet port 2.

Broadcast Storm Protection

Parameter	Description	Settings
Enable	Enables the broadcast storm protection.	-
Protection Level	Defines the storm protection level. The Link150 limits the amount of information it broadcasts or rebroadcasts (based on this setting) to reduce collisions or network traffic. NOTE: If the level is changed, you are prompted to restart the device to implement changes.	• Highest • High • Medium high • Medium low • Low • Lowest

IP Configuration

Description

This page allows to configure the IP parameters including IPv4, IPv6, and DNS settings.

IP Configuration Procedure

Step	Action	Result
1	From the Link150 menu bar, click Settings .	Opens the Settings menu.
2	From the Settings menu, in the Communication submenu, click IP Configuration .	Displays the IP parameters settings.
3	Enter IPv4 , IPv6 , and DNS parameters.	Enters the IPv4, IPv6, and DNS parameters.
4	Click Apply Changes .	Updates IP configuration settings of Link150.

IPv4 Configuration

Parameter	Description	Settings
Automatic	Used to select the mode for assigning IPv4 parameters. Obtain IPv4 parameters automatically using BOOTP or DHCP.	- DHCP (Factory setting) - BOOTP
Manual IP Address	Used to enter the static IP address of the Link150.	169.254.X.Y (Factory setting) NOTE: X and Y are the decimal equivalent of last two hexadecimal bytes of LINK150 Mac address(found on the LINK150 label).
Manual Subnet Mask	Used to enter the Ethernet IP subnet mask address of your network.	255.255.0.0 (Factory setting)
Manual Default Gateway	Used to enter the gateway (router) IP address used for wide area network (WAN) communication.	169.254.2.1 (Factory setting)

IPv6 Configuration

Parameter	Description	Settings
Enable	Defines the IPv6 configuration.	Enabled (Factory setting)
IPv6 Link-local Address	Displays the IP address in IPv6 format. You can use this IP address to open the Link150 homepage.	–

DNS

Parameter	Description	Setting
Obtain DNS Addresses Automatically via DHCP/BOOTP	Defines the dynamic behavior of the DNS server address configuration. Used to obtain the IP address from the DNS server automatically. NOTE: Domain Name System (DNS) is the naming system for computers and devices connected to a local area network (LAN) or the Internet.	–
Manual Primary DNS Server	Defines the IPv4 address of the primary DNS server.	–
Manual Secondary DNS Server	Defines the IPv4 address of the secondary DNS server. Used to perform a DNS resolution when the resolution fails with the primary DNS server.	–

Duplicate IP Address Detection

While connected to your network, the Link150 publishes its IP address. To avoid any duplicate IP address conflicts, the Link150 uses the address resolution protocol (ARP) to see if any other device on your network is using the same IP address. The table below explains how the Link150 handles a duplicate IP address when it is detected.

Duplicate IP Address Scenario

Scenario	Duplicate IP Handling	Network Status LED
Ethernet link detected	Reverts to the default IP address, subnet mask, and gateway address. ARP requests are sent once every 15 seconds until the IP address is available. Link150 uses the IP address when it is available.	Steady red
Manual address change	Reverts to the default IP address, subnet mask, and gateway address. The ARP requests are sent once every 15 seconds until the IP address is available. The Link150 uses the IP address when it is available.	Steady red
Receives an ARP request	If more than one ARP request is detected within 10 seconds, initiate the process to reacquire the IP.	OFF

Serial Port

Description

This page displays the diagnostic data for the devices connected to the serial port.

Setting Procedure

Step	Action	Result
1.	From the Link150 menu bar, click Settings .	Opens the Settings menu.
2.	From the Settings menu, in the Communication submenu, click Serial Port .	Displays the serial port settings options.
3.	Select your mode, physical interface, transmission mode, baud rate, parity, termination, biasing, stop bits and response timeout.	Selects the serial port options.
4.	If you select Slave mode, enter the IP addresses for the remotely connected devices.	Enters the IP addresses of the remote devices
5.	Click Apply Changes .	Updates the serial port settings of Link150.

Serial Port Settings

Parameter	Description	Settings
Mode(Device reboots on mode change)	Selects how the serial COM port on the Link150 is utilized (master or slave). NOTE: When you change the mode and click Apply , the Link150 reboots and clears the device list configuration.	• Master (Factory setting) • Slave NOTE: ION protocol supports only Master mode.
Physical Interface	Selects how the Link150 serial port is physically wired.	• RS485 2-wire (Factory setting) • RS485 4-wire • RS232
Transmission Mode	Selects how data is transmitted over a serial connection.	• For master mode: ○ Automatic (Factory setting) ○ Modbus ASCII NOTE: Transmission Mode is disabled for ION protocol. • For slave mode: ○ Modbus RTU (Factory setting) ○ Modbus ASCII NOTE: Modbus Automatic mode allows you to communicate to Modbus RTU, Jbus, and PowerLogic™ (SY/MAX) slave devices on the same daisy chain.
Baud Rate	Used to select the data transmission speed over a serial connection.	• 19200 bps (Factory setting) • 2400 bps • 4800 bps • 9600 bps • 38400 bps • 56000 bps⁽¹⁾ • 57600 bps⁽¹⁾
Parity	Used to select if data is checked for accuracy using a parity bit.	• Even (Factory setting) • Odd • None
Stop bits	Stop bits sent at the end of every character allow the receiving signal hardware to detect the end of a character and to re synchronize with the character stream.	• Auto (Factory setting) • 1 bit • 2 bits NOTE: Auto sets stop bit as 1 when you set Parity to Even or Odd and as 2 when you set Parity to None .

(1) Only available when **Physical Interface** is set to **RS232** and **Transmission Mode** is set to **Modbus ASCII**.

(2) Only available when **Physical Interface** is set to **RS485 4-wire** or **RS485 2-wire**.

(3) This parameter is not available for ION protocol.

Parameter	Description	Settings
Termination ⁽²⁾	Used to terminate the RS485 line in order to prevent reflections. Setting Termination to Enabled enables the termination resistor.	• Enabled (Factory setting) • Disabled
Biasing ⁽²⁾	Used to prevent invalid data bits by forcing the transmission line into a known state. The transmission line into the RS-485 port enters an indeterminate state when it is not being transmitted to. This indeterminate state causes the receivers to receive invalid data bits from the noise picked up on the cable.	• Enabled (Factory setting) • Disabled
Response Timeout ⁽³⁾	Used to select how long the Link150 waits to receive a response from a serial device. NOTE: The Response Timeout parameter is disabled if the Mode is set to Slave.	• 3 seconds (Factory setting) • 0.1 to 10 seconds
Remote Device Connections (in slave mode only)	Used to define a list of Modbus TCP/IP addresses for the Link150 to use during slave mode communications.	-
(1) Only available when Physical Interface is set to RS232 and Transmission Mode is set to Modbus ASCII. (2) Only available when Physical Interface is set to RS485 4-wire or RS485 2-wire. (3) This parameter is not available for ION protocol.		

Device List

Description

The device list is used for defining the list of devices connected to the Ethernet port or serial port.
The list of connected devices is defined manually by adding individual devices.

Master Mode Device List Setup

For **Master** mode, the usage of the COM port is:

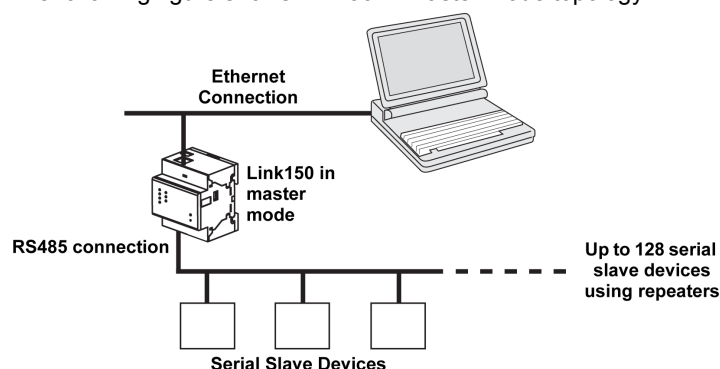
- Modbus RTU devices do not have to be defined in the **Device List**, but it helps you manage your system.
- PowerLogic™ protocol (SY/MAX) devices must be defined in the **Device List**.

NOTE: If none of the protocols are defined, Modbus RTU is available as a default protocol.

NOTE: The number of devices supported can be viewed using the number of viewable devices. Response timeout can be configured in serial port page under the **Settings** → **Communication** tab.

NOTE: Do not use the serial slave addresses 1 or 16 in automatic transmission mode on a daisy chain with mixed protocols. For example, a single daisy chain with some devices using PowerLogic™ protocol and others using Modbus RTU/Jbus protocol.

The following figure shows link150 in master mode topology:



If you selected **Master** mode on the **Serial Port** page, follow the steps to set up the device list:

Step	Action	Result
1.	From the Link150 menu bar, click Settings .	Opens the Settings menu.
2.	From the Settings menu, in the Communication submenu, click Device List .	Displays the Device List page.
3.	Select the number of viewable devices (16 to 128) and click Apply Changes .	Based on the number of viewable devices selected, the number of rows in the device list page appears. NOTE: System communication degrades as the number of devices grow.
4.	Select the Protocol .	Selects the protocol of the connected device.
5.	Enter the Device Name .	Enters the name of the device.
6.	In the Local ID box, type the local ID (address) of the serial slave device.	Enters the local address of the device.
7.	Repeat steps from 4 to 6 until all of the devices are entered.	Enters all of the connected devices.
8.	Click Apply Changes .	Updates the Device List settings.

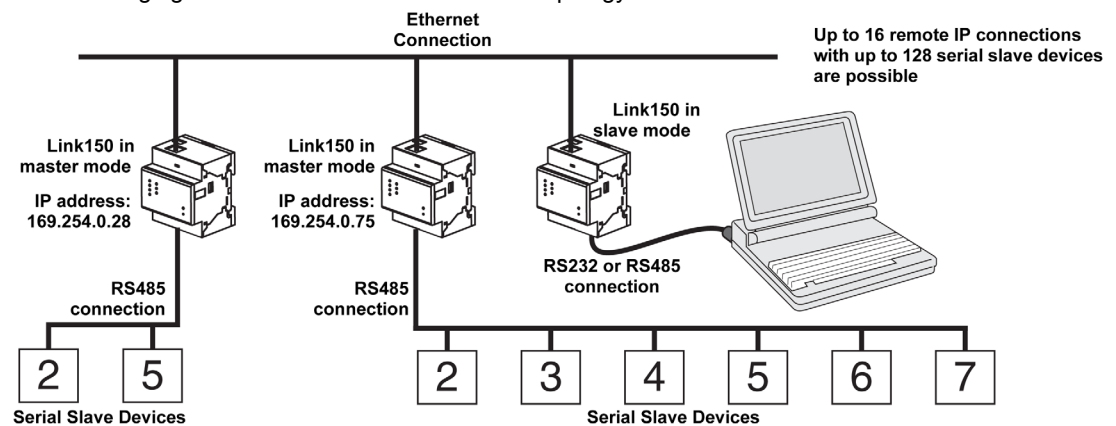
Device List Parameters for Master Mode

Parameters	Description	Settings
Number of Viewable Devices	The maximum number of viewable devices displayed on the webpage.	16, 32, 48, 64, 80, 96, 112, or 128
Protocol	Selects the protocol type.	• Modbus (Factory setting) • PowerLogic • JBus
Device Name	Denotes the name of the slave device.	– NOTE: Device Name must be a unique value.
Local ID	The local address of the device connected to the Link150.	For serial port: 1–247 and 255 NOTE: Local ID must be a unique value.

Slave Mode Device List Setup

Serial port slave mode allows the serial Modbus master devices to access information from serial slave devices across a TCP/IP network.

The following figure shows link150 in slave mode topology:



If you selected Slave mode on the **Serial Port** page, follow the steps below to set up the device list:

NOTE: Before configuring the device list in slave mode the remote device IP address needs to be configured in the **Serial Port** page

Step	Action	Result
1.	From the Link150 menu bar, click Settings .	Opens the Settings menu.
2.	From the Settings menu, in the Communication submenu, click Device List .	Displays the Device List page.
3.	Select the number of viewable devices (1 to 128), and click Apply .	Selects the number of viewable locations that can be used to define serial slave devices connected to the Link150.
4.	Select the Connection	Selects the Modbus TCP/IP address to associate with the remote ID.
5.	Enter the Device Name .	Displays the name of the device.
6.	In the Local ID box, enter the local ID (address) of the serial slave device.	Enters the address of the device that the local Modbus master device will use to access the remote device.
7.	In the Remote ID box, enter the remote ID (address) of the serial slave device.	Enters the serial slave address of the remotely connected device.
8.	Repeat steps 4 to 7 until all of the devices are entered.	Enters all of the mapping information for the Link150 to communicate to the remote devices.
9.	Click Apply Changes .	Updates the Device List settings

Device List Parameters for Slave Mode

Parameters	Description	Settings
Number of Viewable Devices	The maximum number of viewable devices displayed on the webpage.	16, 32, 48, 64, 80, 96, 112, or 128
Connection	Selects the Modbus TCP/IP address to associate with the remote ID.	The Remote Device IPs configured in the Serial Port page.
Device Name	Denotes the name of the slave device.	– NOTE: Device Name must be a unique value.
Local ID	The local address of the device connected to the Link150.	For serial port: 1–247 NOTE: Local ID must be a unique value.
Remote ID	The remote ID (address) of the serial slave device that is remotely connected.	1–247 and 255 NOTE: Remote ID must be a unique value for the same connection.

IP Network Services

Description

This page allows you to configure the settings and activate the IP network services.

IP Network Services Configuration Procedure

Step	Action	Result
1.	From the Link150 menu bar, click Settings .	Opens the Settings menu.
2.	From the Settings menu, in the Communication submenu, click IP Network Services .	Displays the IP Network Services configuration options.
3.	Enter HTTP/Web, HTTPS, Modbus TCP, ION Pass Through, Modbus TCP proxy (for slave mode), Discovery, DNS and SNMP port parameters.	Selects the IP Network Services port options.
4.	Click Apply Changes .	Updates the IP Network Services port settings of Link150.

IP Network Services Parameters

Parameter	Description	Settings
HTTP/Web Port	Allows you to set the port number of the HTTP/Web server.	1-65534 Default setting: 80
HTTPS Port	Allows you to enable or disable the HTTPS service and to set the port number of the HTTPS server.	1-65534 Default setting: 443
Modbus TCP	Allows you to enable or disable the Modbus/TCP service.	1-65534 Default setting: 502
ION Pass Through	Allows you to enable or disable the ION PassThrough service.	Enabled Disabled (Factory Setting)
Modbus TCP Proxy	Allows Modbus TCP master to get the data from slave of Link150. This is applicable only if Link150 is in slave mode.	Enabled Disabled (Factory Setting)
Discovery	Allows you to enable or disable the DPWS service.	Enabled (Factory Setting) Disabled
	Allows you to enable and disable the silent mode and also to set the port number.	1- 65534 Default setting: 5357
DNS	Allows you to set the port number of the DNS server.	1- 65534 Default setting: 53
SNMP	Allows you to enable or disable the SNMP service.	Enabled Disabled (Factory Setting)
	Allows you to set the listening and notification ports.	Listening Port: 1- 65534 - Default setting: 161 Notification Port: 1- 65534 - Default setting: 162

Modbus TCP/IP Filtering

Description

This page allows you to define the level of access for Modbus TCP/IP clients connected to Link150.

Modbus TCP/IP Filtering Configuration Procedure

Step	Action	Result
1.	From the Link150 menu bar, click Settings .	Opens the Settings menu.
2.	From the Settings menu, in the Communication submenu, click Modbus TCP/IP Filtering .	Displays the Modbus TCP/IP Filtering configuration options.
3.	Select Enable Modbus TCP/IP Filtering checkbox.	Enables the Modbus TCP/IP filtering.
4.	In the IP Filtering Exception List section, click Add Exception	Displays Add IP Filtering Rules details.
5.	In the IP Address/Range box, enter IP address and select access level from the Access Level list, and then click Add .	Adds the IP address filtering rules.
6.	Click Apply Changes .	Updates the Modbus TCP/IP Filtering settings of Link150.

Connections

The maximum number of connections supported is 32.

IP Filtering

Parameter	Description	Setting
Enable Modbus/TCP IP Filtering	Activates IP address filtering and assigns the designated level of access.	- Enabled - Disabled (Factory setting)
IP Address/IP Range	List of user-defined IP addresses to be granted or denied access to connected devices.	10 addresses (Maximum allowed IP addresses) NOTE: It also allows you to enter the IP address with the wildcard character (*). For Example, 10.***.***.***
Access Level	Defines the access level for the corresponding IP address.	Read: The following Modbus TCP/IP function codes are allowed: 1 (0x01) 2 (0x02) 3 (0x03) 4 (0x04) 7 (0x07) 8 (0x08) 11 (0x0B) 12 (0x0C) 17 (0x11) 20 (0x14) 24 (0x18) 43 (0x2B), with subfunction codes 14 (0x0E), 15 (0x0F), and 16 (0x10). 100 (0x64) None: Access to the IP address is blocked. Read/Write: Full access is provided.

SNMP

SNMP Managers

The Link150 supports SNMP, allowing a network administrator to access Link150 remotely with an SNMP manager and view the networking status and diagnostics of the Link150 in the MIB-II format.

Step	Action	Result
1	From the Link150 menu bar, click Settings .	Opens the Settings menu.
2	From the Settings menu, in the Communication submenu, click SNMP .	Displays the SNMP parameters.
3	Enter the SNMP System Location .	Enters the system location.
4	Enter the name of the SNMP System Contact person.	Enters the name of SNMP system contact person.
5	Select the Automatic Configuration of System Name button.	Selects the system name automatically.
6	Select Manual Configuration of System Name button to enter the System Name manually.	Enters the system name.
7	Enter the SNMP Get Community Name .	public (Factory setting)
8	Enter the SNMP Set Community Name .	private (Factory setting)
9	Enter the Trap Community information to configure and trap the community name.	alert (Factory setting)
10	Enter the IP address of SNMP Manager #1 .	Enters the IP address of SNMP manager one.
11	Enter the IP address of SNMP Manager #2 .	Enters the IP address of SNMP manager two.
12	Click Apply Changes .	Updates and saves the SNMP setting.

NOTE: It is recommended to avoid using default community strings and use different community names during installation.

Enabled Traps

Enabled Traps allows you to select any of the following traps, which are disabled by default:

Parameter	Description
Cold Start Trap	Generates a trap when the Link150 is powered ON.
Warm Start Trap	Generates a trap when SNMP is enabled.
Link Down Trap	Generates a trap when an Ethernet port communication link is disconnected.
Link Up Trap	Generates a trap when an Ethernet port communication link is reconnected.
Authentication Failure Trap	Generates a trap when an SNMP manager is accessing the Link150 with incorrect authentication.

Advanced Ethernet Settings

Configuring Advanced Ethernet Settings

This page allows you to configure the advanced Ethernet settings.

NOTICE

Only qualified personnel should modify the advanced Ethernet settings of the Link150. Perform such modifications only after you have read and understood the advanced Ethernet settings.

Failure to follow these instructions can result in equipment damage.

Step	Action	Result
1	From the Link150 menu bar, click Settings .	Opens the Settings menu.
2	From the Settings menu, in the Communication submenu, click Advanced Ethernet Setting .	Displays the advanced Ethernet settings.
3	Configure the advanced Ethernet settings, and then click Apply Changes .	Updates Link150 Ethernet and TCP/IP settings.

NOTE: Click the **Defaults** button to change the advanced Ethernet settings to default value.

List of Link150 Advanced Ethernet Settings

Option	Description	Settings
Time to Live	Identifies the number of routers a TCP packet can pass.	1 to 255 (hops) 60 hops (Factory setting)
Enable TCP Keep Alive	Allows you to enable or disable the TCP keep alive transmissions. If disabled, the keep alive packets do not get sent and the connection remains open until it gets closed.	• Enabled (Factory setting) • Disabled
Time	A timer that detects when a connected device on an idle connection becomes unavailable due to events such as a reboot or shutdown.	1 to 65,000 s 30 s (Factory setting)
ARP Cache Timeout	Allows you to specify how long the entries can be kept in the Address Resolution Protocol (ARP) cache.	1 to 65,000 m 15 m (Factory setting)

RSTP

Description

This page displays the diagnostic data of RSTP bridge and RSTP port details.

RSTP Configuration Procedure

Step	Action	Result
1	From the menu bar, click Settings .	Opens the Settings menu.
2	From the Settings menu, in the Redundancy submenu, click RSTP .	Opens the RSTP page.

RSTP Parameters

Parameter	Description	Setting
Enable	Allows you to enable or disable RSTP bridge and port settings.	-

RSTP Bridge Settings Parameters

Parameter	Description	Setting
Bridge Priority	16 bit priority which forms the bridge id.	0 – 61440 Default setting: 32768
Bridge Hello Time	Configuration BPDU emission interval	1– 2 s Default setting: 2 s
Bridge Max Age Time	Time that a configuration BPDU remains valid after being issued by the Root bridge in STP. Not used in RSTP.	6 – 40 s Default setting: 40 s
Transmit Hold Count	Value used by the Port Transmit state machine to limit the maximum BPDU transmission rate. Not more than Transmit Count BPDUs are transmitted in any Hello Time.	3 – 100 messages Default setting: 6 messages
Bridge Forward Delay	Delay used by STP bridges to transition blocked ports to forwarding. Not used in RSTP.	4 – 30 s Default setting: 21 s

RSTP Port 1 and Port 2 Settings Parameters

Parameter	Description	Setting
Port 1 Priority	8 bit priority value which is a part of port id	0 – 240 (in step of 16) Default setting: 128
Port 1 Cost	The contribution of this port to the path cost of paths towards the Root bridge which includes this port.	1 – 200,000,000 according to link speed Default setting: 0 (Auto) RSTP calculates the value based on the link speed of the Ethernet port. When the value is auto, the cost is set with the default value based on the Link Speed. I.e. For 100 mbps, the default value is 200000 and for 10 mbps, the default value is 2000000.

NOTE: If Link150 is not accessible after enabling RSTP, then check with your network administrator if RSTP port is blocked.

User Accounts

Description

The Link150 users are assigned user names and passwords. Each user belongs to a group, and each group has access rights to the Link150 web pages assigned by the Link150 administrator.

There are two pre-defined user accounts:

- **Administrator** (default password is **Gateway**)
- **Guest** (default password is **Guest**)

 WARNING	
POTENTIAL COMPROMISE OF SYSTEM AVAILABILITY, INTEGRITY, AND CONFIDENTIALITY	
Change default passwords at first use to help prevent unauthorized access to device settings, controls, and information.	
Failure to follow these instructions can result in death, serious injury, or equipment damage.	

User Accounts Configuration Procedure

Step	Action	Result
1.	From the Link150 menu bar, click Settings .	Opens the Settings menu.
2.	From the Settings menu, in the User Management submenu, click User Accounts .	Displays the user accounts details.
3.	Click Add User and enter User Name , Password , Confirm Password and then select Role	Enters the new user account name, password, and role.
4.	Click Apply Changes .	Creates the new user account for Link150.
5.	Click Import .	Imports the new user details.
6.	Click Export .	Exports the new user details.

Users

In addition to the two default user accounts, you can create up to 11 user accounts.

Parameter	Description
User Name	Enter a name between 4 and 16 characters for a new user. NOTE: User names is case-sensitive and white space characters are not allowed.
Password	Enter a password between 8 and 16 characters for a new user. NOTE: Password is case-sensitive and must contain at least 1 number, 1 capital letter, and 1 special character.
Confirm Password	Re-enter a password for confirmation. NOTE: Password is case-sensitive.
Role	Select a role for the new user.

Link150 Accounts and Passwords

Accounts	Password
Administrator	Gateway NOTE: Gateway is the default password. It can also be used as a user-defined password.
Guest	Guest NOTE: Guest is the default password. This password is configurable and it can have 8 to 16 characters with at least 1 number, 1 capital letter, and 1 special character.
User-defined accounts (11 accounts possible)	User-defined passwords

Chapter 4

Troubleshooting

Troubleshooting

Troubleshooting

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E in the USA or applicable local standards.
- Turn off all power supplies to this device and equipment in which it is installed before working on the device or equipment.
- Always use a properly rated voltage sensing device to confirm that all power is off.
- Do not exceed the device's rating above specified maximum limits.
- Connect protective ground (earth) before turning on any power supply to this device.

Failure to follow these instructions will result in death or serious injury.

WARNING

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- This equipment must only be installed and serviced by qualified personnel.
- Qualified persons performing diagnostics or troubleshooting that require electrical conductors to be energized must comply with and follow safe electrical work practices. For example, in the USA, see NFPA 70E.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Problem	Possible cause	Solution
Module status LED blinking green (500 ms ON, 500 ms OFF)	Link150 firmware is corrupted	Upgrade firmware (see page 19) and (see page 19). NOTE: If an error message is displayed while deleting the <i>gateway.bin</i> file, then try to copy and paste the <i>gateway.bin</i> file for firmware upgrade.
Module status LED blinking red (500 ms ON, 500 ms OFF)	Link150 firmware is in degraded mode	Replace Link150 in the next maintenance cycle.
Steady red Module Status LED	Link150 is out of service	Call your local service representative for assistance.
Steady red Network Status LED	Duplicated IP address in Link150	Assign a new IP address to the Link150. If the problem persists, call your local network administrator for assistance.
Steady amber in Network Status LED	Error found in IP configuration of Link150	• Verify that all IP parameters are correct. Cross reference to IP configuration page. OR • Call your local network administrator for assistance.
Unable to browse the Link150.	Incorrect network configuration	Verify that all IP parameters are correct.
		Verify that Link150 receives requests (ping Link150 in the DOS prompt. Type ping and Link150 IP address. For example, ping 169.254.0.10).
		Verify that all connection settings in your browser Internet options are correct.
	Lost HTTP port number	Perform factory reset.
None of the LEDs are lit.	Source power is not applied or is not stable	Apply power or check power source.
One of the LEDs is not lit.	The LED is burned out	Call your local service representative for assistance.
Ethernet communication LED is not lit.	Proper link is not established	Make sure that the proper cable is used and connected.

NOTE: Clear cookies if the applied changes are not reflected.



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As standards, specifications and designs change from time to time, please ask for confirmation of the information given in this publication.