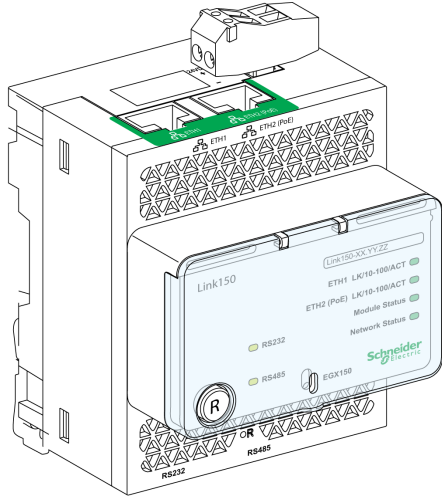# Ethernet Gateway Link150
User Guide

10/2015

Schneider Electric

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.

Table of Contents

Safety Information

Important Information

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 this document also appear online. To access this 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 data sheet.
6	To save or print a data sheet as a .pdf file, click **Download XXX product datasheet**.

The characteristics that are presented in this manual 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 manual 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)
Link150 Instruction Sheet	NHA50221

You can download these technical publications and other technical information from our website at http://download.schneider-electric.com

Chapter 1
Link150 Presentation

What Is in This Chapter?

This chapter contains the following topics:

Ethernet Gateway Link150 Description

Introduction

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

Hardware Description

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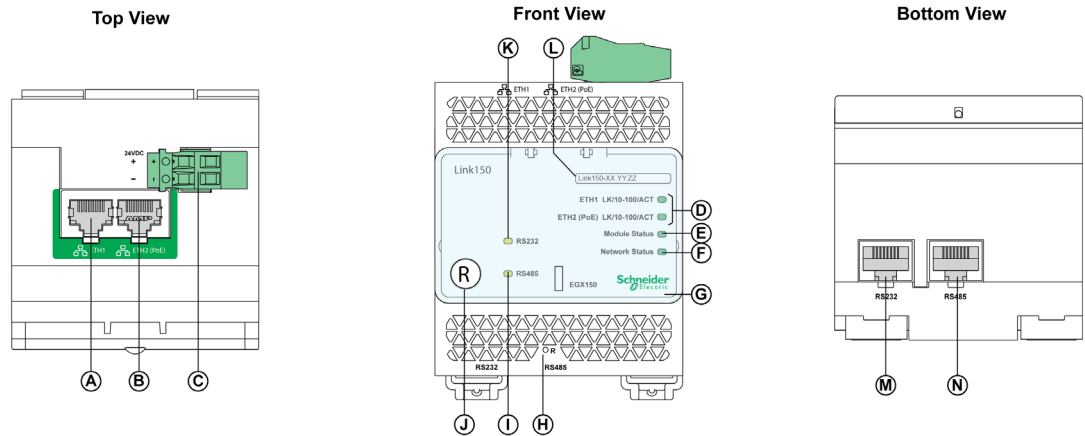
A   ETH1: Ethernet 1 communication port
B: ETH2: Ethernet 2 (Power over Ethernet) communication port
C: 24 Vdc power supply terminal block
D: Ethernet communication LEDs
E: Module status LED
F: Network status LED
G: Sealable transparent cover
H: IP reset pin
I: RS485 traffic status LED
J: Device soft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

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.
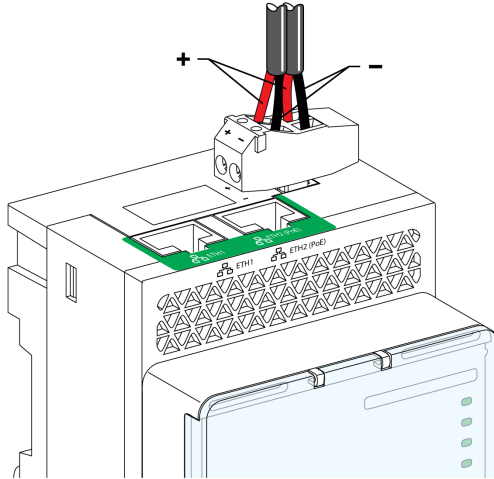
7 mm 0.27 in	0.2-1.5 mm² 24-16 AWG	0.8 N•m 7 lb-in	≤ 3 mm ≤ 0.12 in
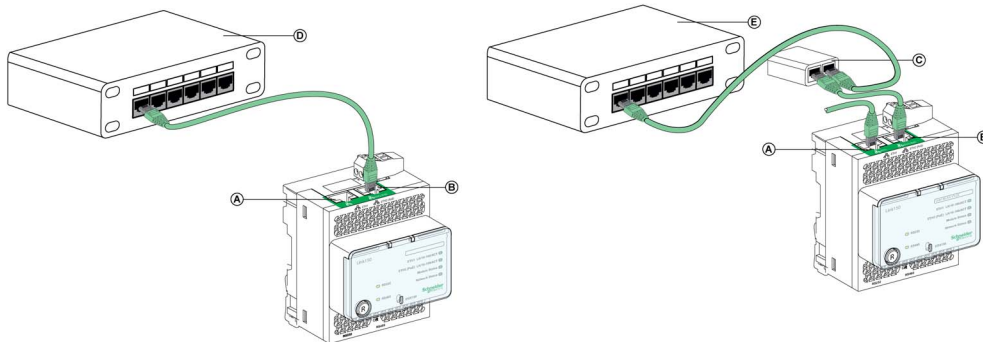
A: Ethernet 1 communication port
B: Ethernet 2 (PoE) communication port
C: Midspan PoE injector
D: Ethernet switch with Endspan PoE ports
E: Ethernet Switch

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 51)* section.

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.

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	From 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.

Upgrading the Firmware, Webpage, and Device Supporting Files in Windows PC Using Batch File

Step	Action	Result
1	Download the latest Link150 firmware `Link150FirmwareAndDataFilesVAAABBBCCC.zip` file from _www.schneider-electric.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 folder in the local PC.
3	Open the `Link150FirmwareAndDataFilesVAAABBBCCC` folder.	Opens the Link 150 firmware folder.
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`	The IP address, user name, and password are updated in the `FirmwareUpgrade.bat` file.
6	Save and exit the `FirmwareUpgrade.bat` file.	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 complete.

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.

Updating the Webpages and Device Supporting Files Using FTP

Step	Action	Result
1	Start the web browser, type `ftp://<device IP address>` 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 login process and locates the directory `wwwroot`.
3	Upgrade the webpage by: ● locate `wwwroot` directory. Except the folders, delete all the files in `wwwroot` directory. Drag and drop the new files from the `wwwroot` folder of the newly saved `Link150_DataFiles_Vx.y.z` file. ● locate `logging/templates` directory. Delete all the files in `logging/templates` directory. Drag and drop the new files from the `logging/templates` folder of the newly saved `Link150_DataFiles_Vx.y.z` 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.

Updating the Exploit Application Using FTP

Step	Action	Result
1	Start the web browser, type `ftp://<device IP address>` 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 exploit if it is already available in the directory.	Deletes the exploit files 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.

Protecting the Environment

Recycling Packaging

Packing materials from this equipment can be recycled. Help protect the environment by recycling them in appropriate containers.

Thank you for doing your part in protecting the environment.

End-of-Life Recycling

Modules of Link150 system have been optimized to decrease the amount of waste and valorize the product components and materials in the usual end of life treatment process.

The product design allows components to enter the usual end of life treatment processes as appropriate:

- Depollute
- Reuse and/or dismantling

This increases the recycling performance and allows the rest of materials to be separated by shredding.

Chapter 2
Link150 Web Server

What Is in This Chapter?

This chapter contains the following sections:

Section 2.1
Ethernet Gateway Link150

What Is in This Section?

This section contains the following topics:

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.

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.

Step	Action
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 31)*.

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.

NOTICE

- Immediately change the default password to a new and secure password.
- DO NOT distribute the password to unauthorized or otherwise unqualified personnel.

Failure to follow these instructions can result in 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.
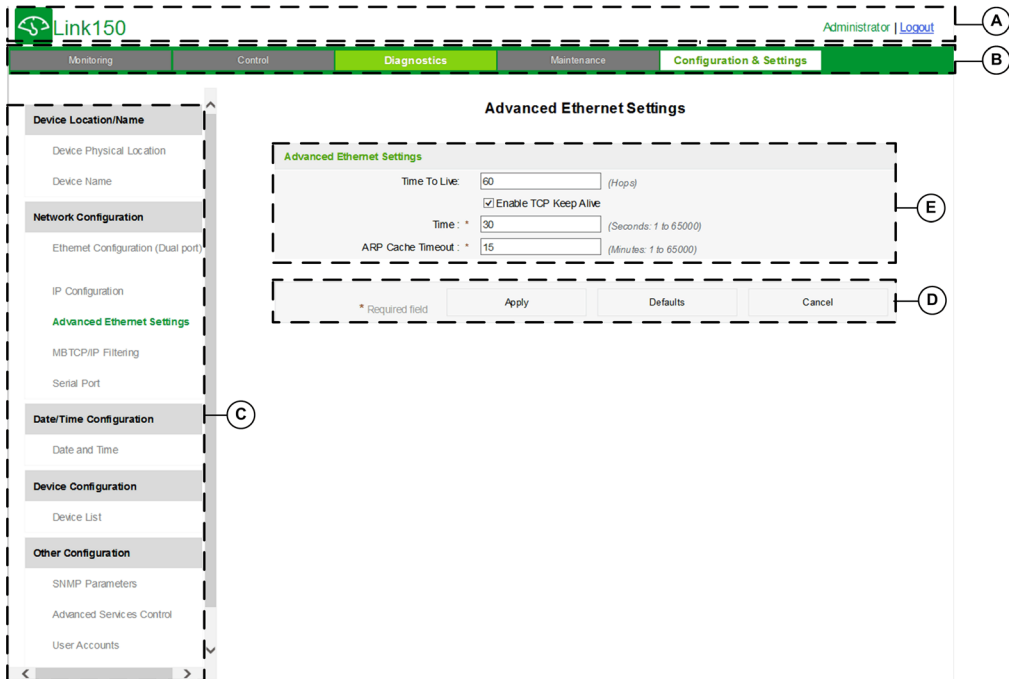
A Banner
B Menu tabs
C Subtabs
D Action button
E Display zone

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 subtab in detail with all related fields.

Link150 Webpage Description

Diagnostics Webpage

Diagnostics Submenu	Webpage	Description
General	**Statistics** *(see page 45)*	Displays diagnostic data used to troubleshoot network-related problems.
Product Information	**Device Information** *(see page 48)*	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 ● Manufactured date
Device Health Check	**Read Device Registers** *(see page 49)*	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 28)*	Click **Blink ON** to locate the Link150 device. The RS485 LED blinks for 15 s.
	Device Name *(see page 29)*	Configures the Link150 device name
Network Configuration	Ethernet Configuration (Dual port) *(see page 30)*	Configures the Ethernet ports.
	IP Configuration *(see page 31)*	Configures the IP parameters including IPv4, and DNS settings.
	Advanced Ethernet Settings *(see page 32)*	Configures the advanced Ethernet settings.
	MBTCP/IP Filtering *(see page 33)*	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 34)*	Configures serial communication parameters.
Date/Time Configuration	**Date and Time** *(see page 36)*	Sets the date and time manually.
Device Configuration	**Device List** *(see page 37)*	Configures the Modbus devices.
Other Configuration	**SNMP Parameters** *(see page 40)*	Configures Simple Network Management Protocol (SNMP).
	Advance Service Control *(see page 41)*	Enables or disables the advanced service control parameters.
	User Accounts *(see page 42)*	Manages groups and users, including user email addresses.
	Webpage Access *(see page 43)*	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:

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 untill 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

The maximum number of Modbus TCP/IP client connections allowed: 8 or 16.

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**
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** ● For slave mode: ○ **Modbus RTU** (Factory setting) ○ **Modbus ASCII** **NOTE:** 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**
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**

Parameter	Description	Settings
Response Timeout	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**.		

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^{TM} 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^{TM} protocol and others using Modbus RTU/Jbus protocol.

The following figure shows link150 in master mode topology:
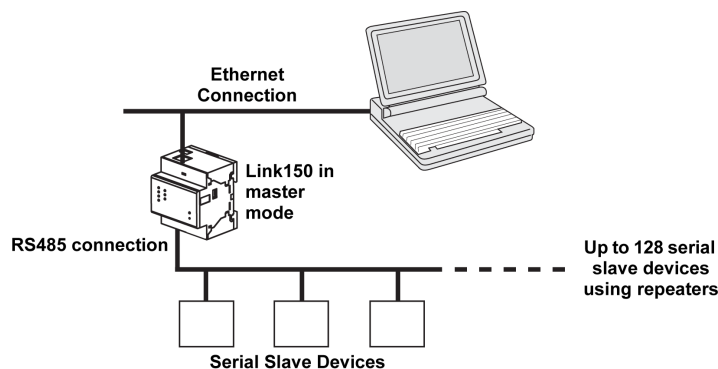
If you selected **Master** mode on the **Serial Port** page, follow the steps to set up the device list:

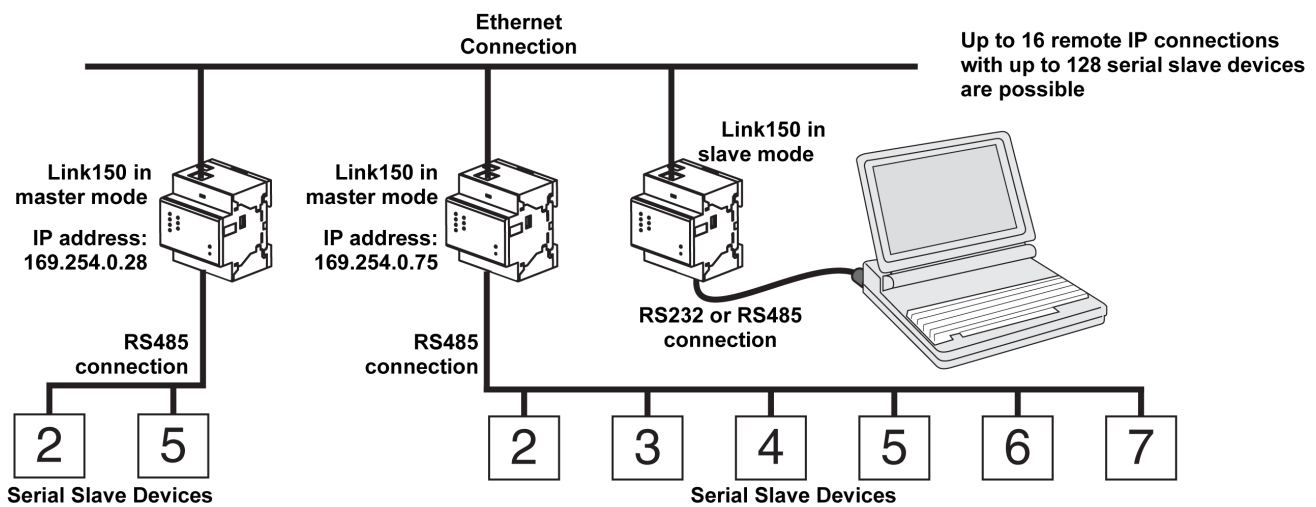| Step	Action	Result
1.	From the **Configuration & Settings** page, click **Device List**.	Opens the **Device List** page.
2.	Select the number of viewable devices (16 to 128) and click **Apply**.	Based on the number of viewable devices selected, the number of rows in the device list page appears. **NOTE:** 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 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

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 51)*.	● 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**)

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
User-defined accounts (11 accounts possible)	User-defined passwords

Webpage Access

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:

Statistics

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	An error marked from the slave or the response timeout.
Outbound Read Messages[1]	A counter that increments each time a read request message is sent.
Outbound Write Messages[1]	A counter that increments each time a write request message is sent.
Inbound Read Messages[2]	A counter that increments each time a read request message is received.
Inbound Write Messages[2]	A counter that increments each time a write request message is received.
(1) Available when the device is in master mode.	
(2) 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

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.

Link150 Web Server

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 manufactured 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
Manufactured 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
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, EXPLOTION, 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.

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

Problem	Possible cause	Solution
Module status LED blinking green (500 ms ON, 500 ms OFF)	Link150 firmware is corrupted	Upgrade firmware *(see page 15)*. **NOTE:** If an error message is displayed while deleting the *exploit.bin* file, then try to copy and paste the *exploit.bin* 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.

10/2015