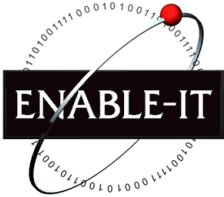


Ethernet Extension Experts



Enable-IT 820 Series Extended Ethernet User Manual



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ABOUT THIS GUIDE

This guide provides all the information needed to install and use the Enable-IT 820 Extended Ethernet Unit. This guide is intended for use by technicians who are responsible for installing and setting up network equipment. Consequently, it is assumed that the installer has a basic working knowledge of LANs (Local Area Networks) and voice telecom wiring.

If the information in the release notes that are shipped with your product differs from the information in this guide, follow the instructions in the release notes.

Most user guides and release notes are available in Adobe Acrobat

Reader Portable Document Format (PDF) or HTML on the Enable-IT World Wide



INTRODUCING THE 820 EXTENDED ETHERNET KIT

Congratulations on purchasing the Enable-IT's 820 Extended Ethernet Kit — the simplest method to stretch your broadband solutions for in-building deployment in commercial office buildings, hotels, and multi-tenant residential units.

The 820 Extended Ethernet Unit offers the Lowest Cost Solution in a simple design for rapid install using existing 2 pair Telco wiring.

This chapter contains introductory information about The 820 Extended Ethernet Kit and how it can be used in your network. It covers the following topics:

- About the 820 Extended Ethernet Kit
- Key Benefits
- Summary of Features
- Typical Applications

DO NOT INSERT ANY BLANK RJ-45 HEADS INTO ANY PORTS BEFORE CRIMPING – OTHERWISE YOU WILL RENDER THE PORT USELESS – BENT PINS

About the 820 Extended Ethernet Kit

The 820 Extended Ethernet Kit solves the problem of high costs associated with stretching your backbone with traditional fiber or a series of hubs/repeaters.

In many office buildings, preferred network access is a dedicated Ethernet line, however Ethernet over twisted pair wiring has its distance limitations of just 328 ft. In order to drive Ethernet signal further, one would have to add repeaters to each segment of 328ft twisted pair cabling; this is often insufficient and too costly in multi-story buildings. Fortunately, the Enable-IT 820 Series Extended Ethernet can push the reach of Ethernet to more than 2 times the typical Ethernet distance.

A simple design methodology would be to think of the 820 extending a standard Ethernet line with power (PoE) up to 900' (275m) and can also include 2 voice lines simultaneously.

To increase the durability and extended use of the product providing maximum future technology protection, 820 Extended Ethernet Unit meets the challenge of modern switched LANs and allows you to add features and capacity as your network expands. The 820 LRE kit includes a powered switch end and an un-powered remote end. POE adapters can be used in conjunction with the un-powered 820 end by using the spare pairs in a CAT rated cable.

Unit Model	Wiring	Data Rate	Max. Distance
820	(2) pair CAT 2 up to CAT5e	15MB FD	900ft / 275m

Key Benefits

The following list identifies the 820 Extended Ethernet Kit key benefits.

- Dramatic cost reduction over any competing technology.
- The Enable-IT 820 Extended Ethernet Kit require No Power (CPE remote end), No Firmware, No Maintenance
- Broadband technology that delivers in-building Ethernet access over 2 pair of existing Category 2 up to Category 5e wiring up to 900', whether spare or actively in use for analog or digital voice. This means no new wiring is required.
- Provides one scalable infrastructure for Internet access, dual POTS, VoIP, video, Power over Ethernet (PoE) and virtual private networking.
- Rapid installation with small box profile, no programming and no firmware to upgrade.
- Low profile box with dual POTS line, PoE and Ethernet data all in a single RJ-45 Ethernet jack.

Summary of Features

The Enable-820 Extended Ethernet Unit has the following hardware features:

- 1 Extended Ethernet line over existing CAT 2 (Telco) up to CAT5e wiring
- Rapid Telco style installation – no programming required
- Supports digital VoD channels
- Drives Ethernet 15 Mbps full-duplex service delivery up to 900ft / 275m
- Network Equipment independence – Transparent to protocols/applications/MAC
- Maintains lifeline POTS
- 802.3af Standard & Cisco PoE (Power over Ethernet) support – pass through

Specifications:

5v power consumption on CO
Passive Device, No Firmware.

Dimensions:

Height: 1.2" (30mm)
Depth: 2.6" (66mm)
Width: 4.4" (111mm)

Interfaces

- (1) RJ-11 dual POTS input/output
- (1) RJ-45 10/100Mb LAN input/output w PoE
- (1) RJ-45 Transport LINE port
- (1) 5v DC Power adapter input for CO unit

Functionality:

Data Rates 15Mbps Full Duplex
Ethernet modes supported
10/100Mbps half duplex
10/100Mbps full duplex
Max Distance 275m / 900ft
PoE compatible – pass through

Environment

Operating temp: -13°F to 140°F (-25° to 60°C)
Storage temp: -13°F to 140°F (-25° to 60°C)
Humidity 5% to 90%, non-condensing

Typical Applications

Enable-IT 820 Extended Ethernet Units are usually installed onto telephone wiring infrastructures where extension of backbone services is required and expensive fiber options are prohibitive. The 820 Extended Ethernet Kit allow a standard Ethernet segment to be deployed quickly over existing 2 pair Telco Copper Wiring in combination with existing POTS voice signals. No power is required for the remote 820 unit and Ethernet signals can be driven up to 900ft. That is 572ft beyond standard CAT 5 Ethernet. There are no moving parts and no firmware to upgrade, thus providing maintenance free operation.

Installers have the convenience of a 10/100Mbps LAN Ethernet unit for peace of mind connectivity, low power and no maintenance. Rapid installation allows for minimal interruption and the Broadband technology allows for investment protection up to 10 years with no firmware or replacement issues. Bandwidth can be scaled according to the Broadband Access Provider needs. The 820 Extended Ethernet Kit is a passive device so interruption of Internet service does not affect POTS services. Carriers and Access Providers can come and go, but the 820 Extended Ethernet Unit technologies continue to provide lasting value such as the other utilities like Water, gas and electricity.

The Enable-820 Extended Ethernet Kit is suited for the following key environments:

- **Commercial Buildings (Multi-Tenant Units)**
- **Business Parks (Multi-Tenant Units)**
- **Apartments (Multi-Residential Units)**
- **Hotels (Multi-Hospitality Units)**
- **Business Suites (Multi-Hospitality Units)**
- **School Campuses (University, K-12)**
- **College Housing (Multi-Residential Units)**
- **Mining Operations – Quarries, Mine shafts**
- **Nautical Infrastructure – Cruise ships, Marinas, dive operations, subs**
- **Video Surveillance/Security**
- **WiFi Deployment – ISP's, RV Parks, Construction sites**
- **Manufacturing – Foundries, pharmaceutical, aerospace, automotive, petroleum, concrete plants, etc.**
- **Retail POS – Department stores, Bars, restaurants, retail spaces**
- **Government – Naval ships, FEMA, Housing, USGS, National Parks, Forestry, Research stations, NASA, utilities, etc.**
- **Education – outdoor camps, college campuses**
- **Healthcare – Hospitals, elder care, outpatient facilities**
- **Entertainment – Movie theaters, home entertainment, fairs, outdoor venues**

INSTALLING THE 820 EXTENDED ETHERNET KIT

The Enable-IT 820 Extended Ethernet Kit has a distance restriction of 900ft or 275m over Category 2 up to Category 5e wiring from device extension to device extension. Therefore quick, simple site surveys and installation planning are highly recommended.

This chapter describes the recommended installation process for the Enable-IT 820 Extended Ethernet Kit. It covers the following topics:

- Site Plan – Installation Design Considerations
- Unpacking the Enable-IT 820 Extended Ethernet Kit
- Performing the On-Site Installation

Site Plan - Installation Design Considerations

- Total distance of 900ft wiring from 820 CO to LAN device on end of 820 CPE.
- 2 Pair Telco wiring or greater for the Enable-IT 820 Extended Ethernet Units.
- Wire pair used must be straight through, no taps/connection points.
- Twisted Pair cabling delivers the best performance over distance.
- Cisco PoE single line injector support built in.
- Transparent to single line 802.3af PoE or 802.3at PoE Plus devices.

We highly recommend a quick test to ensure the working order of you 820 units. To do this, please use one of the Ethernet patch cords provided and attach each end to the LINE port on the 820 units. Next use another Ethernet patch cord to attach a LAN device to the Data/PoE – OUT port of the 820 CPE. Next step is to attach another Ethernet patch cord to the Data/PoE – IN port of the 820 CO. Final step is to apply Power to the 820 CO unit.

LED indicators will provide visual operational status of the 820 units.

CPE Sync / Act – Indicates remote LAN is visible and connected with activity.

If this LED fails to light, the wiring between the CO and CPE is incorrect, the wiring may have a short or the distance from the 820 CO through the 820 CPE to your remote LAN device exceeds 900ft or 275m.

CO LAN Act - Indicates local LAN is visible and connected with activity.

CO Power - should be lit when 5v adapter is connected and powered

This confirms proper operation of the units.

For installation at your desired location, keep in mind the following:

The backbone cable between the CO & CPE – RJ-45 LINE ports uses –

2-pairs of wiring for data and voice use only (RJ-45 pins 1, 2, 3 & 6)

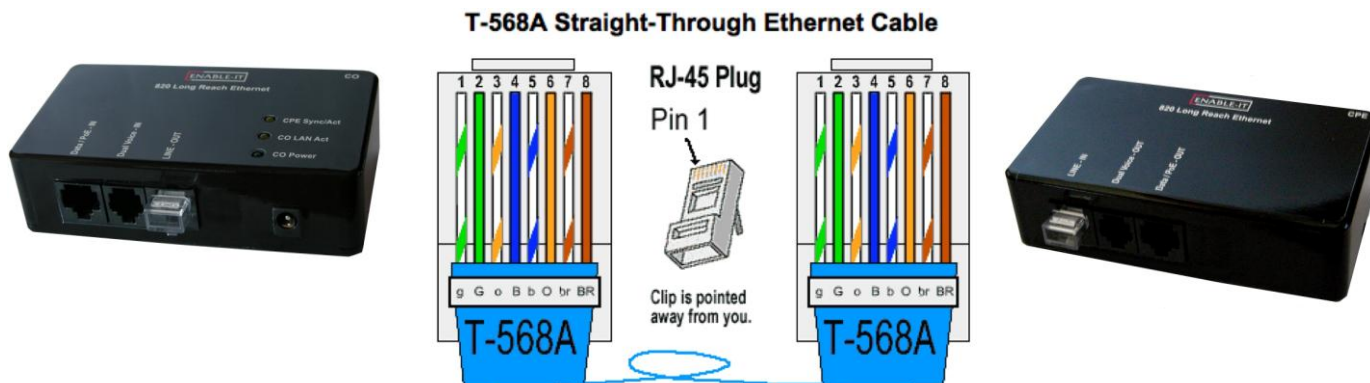
or

4-pairs of wiring for data, voice and PoE (All RJ-45 pins)

Two RJ-45 blank male heads have been provided in the kit for use in connecting your wiring to the 820 LINE ports. The RJ-45 Pins are straight through just like an Ethernet patch cord. See the following diagrams for specific pin details for best performance.

DO NOT INSERT ANY BLANK RJ-45 HEADS INTO ANY PORTS BEFORE CRIMPING – OTHERWISE YOU WILL RENDER THE PORT USELESS – BENT PINS

Attach RJ-45 Male heads to your existing wiring and follow the diagram below. For data only use pins 1,2,3 & 6. For Data and PoE use all pins. PoE uses pins 4,5,7 & 8



Unpacking the Enable-IT 820 Extended Ethernet Kit

Carefully remove the Enable-IT 820 Extended Ethernet Units all packing materials from the box. Verify that the items listed below are present. Make sure that the equipment supplied matches what you ordered. If any items are missing or damaged, please contact your Enable-IT or your distributor for assistance.

- (2) Enable-IT 820 Extended Ethernet Units (1 CO & (1) CPE
- (1) 5v Wall power adapter for originating 820 CO unit (powered with LED's)
- (2) LAN Ethernet Patch Cords for end device attachment
- (2) RJ-45 Blank Male heads (for use on your wiring)
- Enable-IT 820 Extended Ethernet Unit User Manual (this manual)

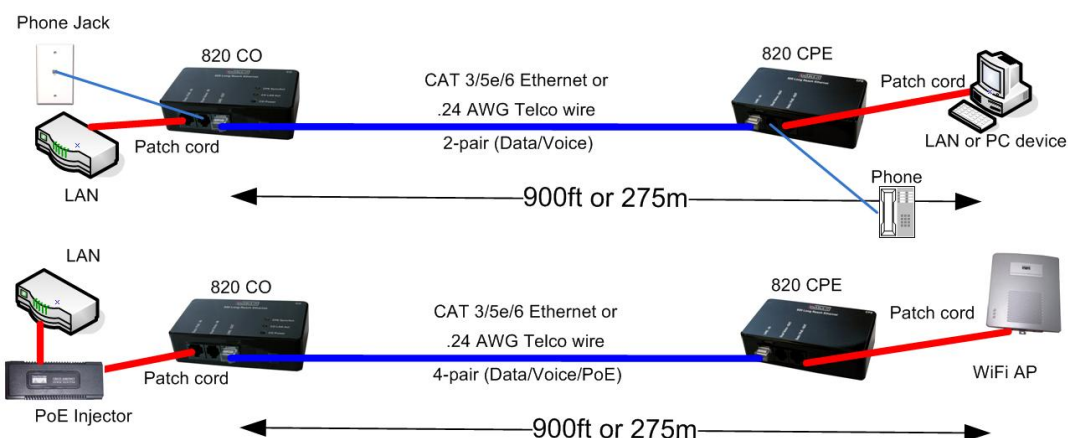
It is highly recommended you test and become familiar with the basic operation of the units before installing in the field. Use one of the provided LAN patch cords in the kit to connect the 820 CO and CPE LINE ports together. Power the CO and test your equipment. LED indicators will provide visual operational status of the 820 units.

CPE Sync / Act – Indicates remote LAN is visible and connected with activity.

If this LED fails to light, the wiring between the CO and CPE is incorrect, the wiring may have a short or exceeds 900ft.

CO LAN Act - Indicates local LAN is visible and connected with activity.

CO Power - should be lit when 5v adapter is connected and powered



Performing the On-Site Installation

After removing the Enable-IT 820 Extended Ethernet Units from the box all that remains to install the unit on-site is to mount the unit, add RJ-45 Male heads to your wiring, connect the wiring, cross connect voice lines if needed and attach end device Ethernet patch cord cabling.

1 Mounting the Enable-IT 820 Extended Ethernet Kit

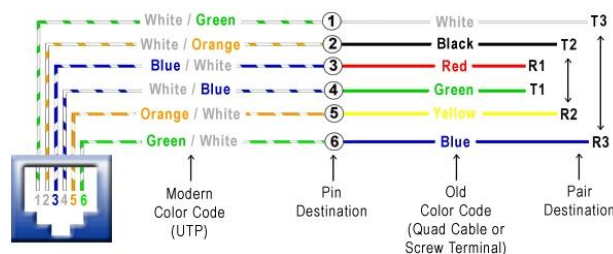
The Enable-IT 820 Extended Ethernet Units are designed for quick wall mounting. Choose a location to mount each of the Enable-IT 820's where the maximum distance does not exceed 900ft or 275m total between devices to be connected. When wall-mounting the units it is recommended that you use the appropriate screw anchors for your mounting surface. If mounting on existing plywood use wood screws; if mounting onto drywall or sheetrock, use plastic drywall anchors to secure your installation.

2 Attaching cabling and devices to the Enable-IT 820 Extended Ethernet Kit.

Attach your remote PoE splitter or your LAN device to the 820 CPE unit (Data/PoE – OUT) RJ-45 port with one of the Ethernet patch cords provided. Next attach your PoE Injector or LAN device to the 820 CO unit (Data/PoE – IN) RJ-45 port with one of the Ethernet patch cords provided.

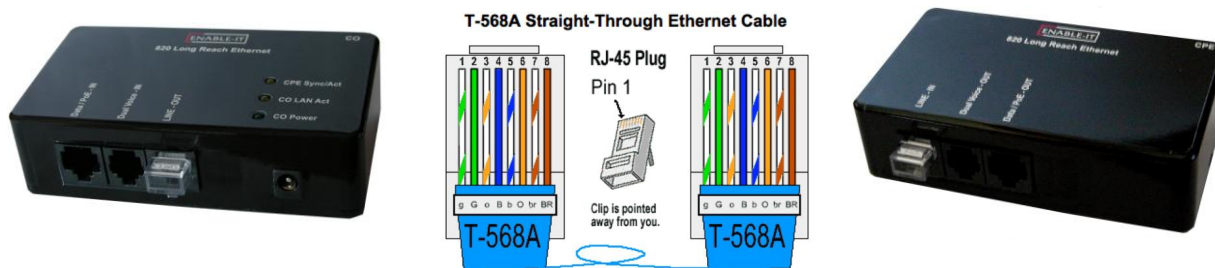
If you plan on using voice service as well, insert your dial tone voice line/lines to the 820 CO unit (Dual Voice – IN) RJ-11 port and telephone handset to the 820 CPE unit Dual Voice – OUT) RJ-11 port.

Note: If you select to input voice lines into your 820 units, the Dual voice pinout is as follows: The innermost pins (3 & 4) are used for transport for voice line 1 and pins (2 & 5) are used for transport voice line 2.



3 Building the backbone between the 820 units.

Using the provided RJ-45 blank heads, crimp onto your selected 2-pair or 4-pair wiring and insert into the LINE port of each 820 unit. Follow the following diagram to create a T-568A standard connection between the 820 units.



This wire run becomes your Ethernet backbone between the two 820 units. The wire pair must be straight through and not have any connector blocks in-between the 820 units. If you have a connector block, you must remove the 2-pair and bridge together with Telco wire butt clips.

- 4 The last step is to plug in and apply the provided 5v wall power adapter into the 820 CO unit. All the LED's should illuminate and the following LED indicators will provide visual operational status of the 820 units.

CPE Sync / Act – Indicates remote LAN is visible and connected with activity.

If this LED fails to light, the wiring between the CO and CPE is incorrect, the wiring may have a short or the distance from the 820 CO through the 820 CPE to your remote LAN device exceeds 900ft or 275m.

CO LAN Act - Indicates local LAN is visible and connected with activity.

CO Power - should be lit when 5v adapter is connected and powered

Technical Support

Enable-IT OEM Technical Support is available directly to customers and distributors. All support requests are processed through the online support portal. This allows us to provide assigned support ticket numbers in order to bring closure to any technical issues.

Online Technical Services

The Enable-IT Support Portal is available 24/7. No password or user account is necessary. Please use this support website as your first source for help as it contains an on line knowledge base of articles, documentation, FAQ's and other problem-solving resources. This web-based support resource provides the quickest solution to the most common technical support issues.

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Enable-IT, Inc. warrants to the original purchaser of the Product ("you" or the "End User") that, for the four (4) year period commencing on the date the Product was purchased (the "Warranty Period"), the Product will be substantially free from defects in materials and workmanship under normal use and conditions. **Electrical damage is not an item that is covered under this warranty or extended warranties.**

If authorized by Enable-IT to return a Product which does not conform to the warranty set forth above, the End User must: (1) obtain a return materials authorization (RMA) number from Enable-IT by contacting the Customer Service Dept. at 888-309-0910 between the hours of 8:00 a.m. and 5:00 p.m. PST and otherwise fully comply with Enable-IT's then-current RMA policy; (2) return the Product to Enable-IT, Inc. in its original packaging freight pre-paid; and (3) provide to Enable-IT the original receipt or bill of sale establishing the date on which the Product was purchased.

Please ship Authorized RMAs to:

Enable-IT Processing Facility
16600 Harbor Blvd, Ste G
Fountain Valley, CA 92708

Returning Products for Refund

30-Day refund applies to single kit Ethernet Extenders only and is subject to a 15% Restocking Fee. Shipments without valid / authorized RMA number or sent to our corporate Las Vegas Address can be refused and or billed for additional shipping.

ENABLE-IT LIMITED WARRANTY

Enable-IT warrants the Enable-IT 860 Extended Ethernet Kits solely pursuant to the following terms and conditions.

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a. Express Warranty Enable-IT warrants to the original purchaser of the Product ("you" or the "End User") that, for the four (4) year period commencing on the date the Product was purchased (the "Warranty Period"), the Product will be substantially free from defects in materials and workmanship under normal use and conditions. This warranty does not apply to Products which are resold as used, repaired or reconditioned or consumables (such as batteries) supplied with the Product. **Electrical damage is not an item that is covered under this warranty or extended warranties.** Enable-IT does not make any warranty with respect to any third party product, software or accessory supplied with or used in connection with the Product and such third party products, software and accessories, if any, are provided "AS IS." Warranty claims related to such third party products, software and accessories must be made to the applicable third party manufacturer.

b. Remedies for Breach of Warranty In the event of a breach of the foregoing warranty, Enable-IT will, in its sole discretion and at its cost and subject to the terms of the following paragraph, repair the non-conforming Product, replace the non-conforming Product with a new or reconditioned Product or refund of the purchase price for the Product. Any new or reconditioned Product provided pursuant to this paragraph is warranted as provided herein for the remainder of the original Warranty Period. THE REMEDY SET FORTH IN THIS PARAGRAPH SHALL BE THE END USER'S SOLE AND EXCLUSIVE REMEDY FOR BREACH OF THE FOREGOING WARRANTY.

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Products returned to Enable-IT without an RMA number will be returned to the End User. Enable-IT shall not be responsible for damage or loss during shipment of the returned Product to Enable-IT.

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