POE TEXAS PRESENTS:

POWER OVER ETHERNET SPECIFIER'S GUIDE

A rapid reference guide for technical sales and design professionals

Specify, select, and install the right power over ethernet for your application.

PROJECT TYPE

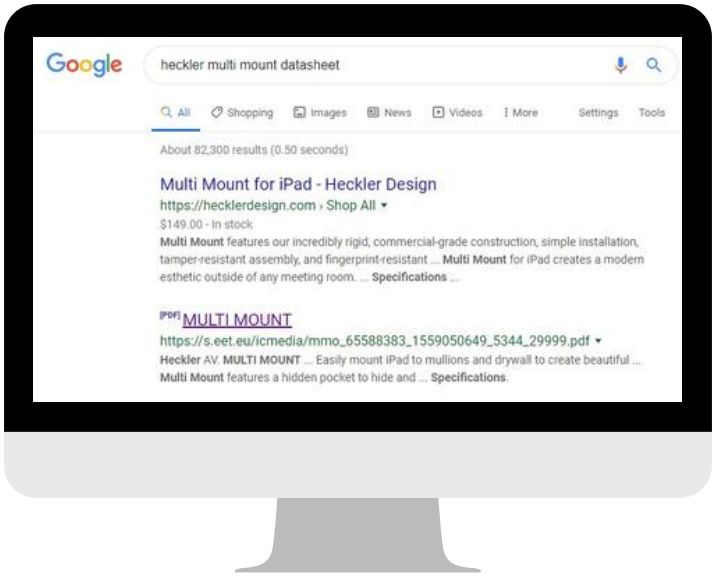
SELECT THE TYPE OF PROJECT

I need to install a . . .

- [ ] **Non-PoE Device: Tablet or Computer Display**
- [ ] **Automated Lighting or Blinds**
- [ ] **IP Cameras**
- [ ] **IP Phones**
- [ ] **Wifi Access Point**
- [ ] **Other**

PRO TIP: PRODUCT SPECS

During the specification, design, and installation of the device, you will want to have the product specifications handy. Yes, you could buy one and pull the paper copy out of the box. However, your best bet is to simply google "[Product name] datasheet" to bring up a digital copy of what you're looking for.



POE TYPE

SELECT THE RIGHT TYPE OF POWER OVER ETHERNET FOR THE PROJECT

Let's confirm a few details to make sure you're picking the right Power Over Ethernet for your application.

System Data Rate:

- ☐ 10/100 (Half Duplex)
- ☐ Gigabit (Full Duplex)
- ☐ Wireless

You need to know if your device must have gigabit data to operate. Protocols like Newtek's NDI, streaming cameras, Dante, data transmission, or other high bandwidth applications may require gigabit. PoE lighting, kiosks, and non-PoE applications usually work just fine on 10/100 or Fast Ethernet. ***Check your datasheet under the "connection" section to see what your device does.***

POWER OVER ETHERNET TYPE

Integrated PoE

- ☐ IEEE 802.3af - "POE"
- ☐ IEEE 802.3at - "POE+"
- ☐ IEEE 802.3bt - "POE++" or "4 Pair PoE"
- ☐ 24 Volt Passive

Non-PoE

- ☐ Tablet
- ☐ Computer
- ☐ Camera
- ☐ Other Device

24 Volt Passive PoE is an early infrastructure standard used in some telecom applications or in places where 48 volt PoE won't work. You most likely see this with products from Ubiquiti or Mikrotik

POE TYPE

READING THE SPEC SHEETS

We'll show you what kinds of things you're looking for on your datasheets

Camera & Lens	
Video Sensor	1/2.7" CMOS, 2.12 Mega Pixels
Frame Rates	1080p-60/50/30/25, 1080i-60/50, 720p-60/50/30/25
Frame Rates (CVBS)	576i-30, 480i-30
Focal Length	20x, F4.42mm-88.5mm, F1.8-F2.8
Lens Zoom	20x
Field of View	60.7°
Min Lux	0.5 Lux at F1.8, AGC ON
Shutter Speed	1/30s - 1/10000s
SNR	≥55dB
Vertical Flip & Mirror	Supported
Horizontal Angle of View	3.36° (tele) to 60.7° (wide)
Vertical Angle of View	1.89° (tele) to 34.1°(wide)
Working Environment	Indoor

Pan & Tilt Movement	
Pan Movement	±170°
Tilt Rotation	Up: 90°, Down: 30°
Presets	10 via IR (255 via Serial or IP)

Rear Board Connectors	
Video Output	NDI | HX, HDMI, 3G-SDI, IP, CVBS
Network Interface	RJ45
Audio Interface	Line In, 3.5mm (NDI, HDMI & IP Stream)
Communication	RS-232, RS485, PELCO-D/P, NDI
Baud Rate	2400/4800/9600 bits
Power Supply	JEITA type Power Adapter (DC IN 12V)
3G-SDI Interface	BNC – 75 Ohm, Female
USB 2.0 Interface	Future Use

Electrical Index	
Power Supply	12W (Max)
Input Voltage	12V DC (10.8 - 13.0V DC) or PoE 802.3af

Physical Specifications	
Dimension (in.)	5.6W x 6.5H x 6.7D (7.8H max w/ Tilt)
Dimensions (mm)	142W x 164H x 169D (198H max w/ Tilt)
Box Dimensions	9" x 9" x 10" | 229mm x 254mm x 229mm
Camera Weight	3.10 lbs. (1.41 kg)
Boxed Weight	5.4 lbs. (2.45 kg)

Product Specifications

Connector Types	USB Type C
Data Rate	10/100/1000
Dimensions	4.5 x 2 x 1 in
Efficiency	90%
Input Voltage Range	44-56 volts (IEEE 802.3at compliant)
LEDs Per Port	Green (POE) / Yellow (USB-C)
Max Power for Kit	25 watts
Mount Type	Wall or DIN rail clips
Operating Humidity	5% to 90%
Operating Temperature Range	-10 - 60C
Output Voltage	5v/3A; 9v,2.4A; 12v,2A; 15V,1.5A; 20V,1.3A
PoE Method	IEEE 802.3at / PoE+ / Passive 30 watt
PoE Mode/Pinout	Mode A/B
PoE Standard	IEEE 802.3at
Power Input	25.5 watts
Weight	3 oz

POE TYPE

WHAT DOES IT REALLY MEAN?

PoE Type or Standard	Nickname	Power Per Port (at the device)	Types of Devices
IEEE 802.3af	PoE	12.9 watts	IP cameras  IP phones  iPads and Tablets (<10”) 
IEEE 802.3at	PoE+	25.5 watts	Outdoor / PTZ Cameras  Dual Radio Wifi Access Points  USB Type C phones and tablets (>10”) 
IEEE 802.3bt	PoE++ 4Pair PoE	71 watts	Televisions  Lights  Blinds  Laptops 
*Passive PoE	24-56 Volt PoE Passive (4PPoE)	Up to 55 watts	Ubiquiti or Mikrotik Wireless Internet PtP or PtMP (big Wifi Radios) 

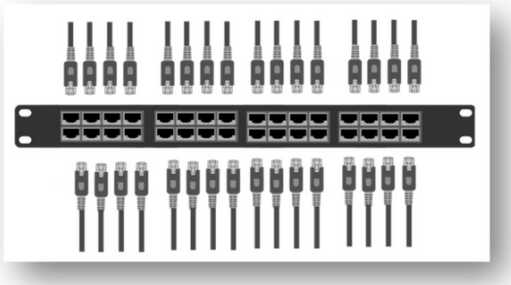
**Passive PoE can operate anywhere from 12 volts up to 58 volts. You'll want to check your specifications carefully to make sure they match your device.*

POE POWER SOURCE

ONCE YOU KNOW THE POE TYPE, NOW YOU CAN CAN PICK THE POWER SOURCING EQUIPMENT (PSE)

In general, you have two options when selecting PoE Power Sourcing Equipment (PSE): PoE switch or PoE midspan. The decision really comes down to three key factors

A PoE Switch adds power and routes data between devices. One data connection in, multiple ports of power and data out.



A PoE Midspan (injector) adds power but does not manage the data. Each "Poe out" port has its own "data in" port

WHY POE SWITCH?

- You have a new installation where you can set it up from scratch
- You don't require any "non-standard" features from the switch
- You can afford the higher prices for the higher PoE standards

WHY POE MIDSPAN?

- You have an existing installation with settings you don't want to change
- You require special networking features that drive up the cost of the switch and PoE combined
- You need a more cost effective approach to the higher PoE standards

POE POWERED DEVICE

IF YOUR DEVICE HAS INTEGRATED POE, YOU CAN SKIP THIS PAGE. OTHERWISE, YOU LEARN HOW TO MAKE NON-POE DEVICES POE POWERED

This usually can be solved by the type of connector your device has, which will be a surprisingly important feature. You use the connector type to select the PoE splitter or adapter for your application.

USB TYPE C

Power Delivery - GAT-USBC & GAT-USBC-PD

LIGHTNING

5 volts - AF-LIGHTNING & GAF-LIGHTNING-PD

MINI USB

5 volts - GAF-5V10W - connector on request

MICRO USB

5 volts - GAF-MICROUSB & AF-5V5W & GAF-USB2

USB A

5 volts - GAF-USB & GAF-USB2

DC SPLITTERS

PoE - 13 watts and less
- 5 volt 2 amp - GAF-5v10w
- 12 volt 1 amp - GAF-12v12w

PoE+ - 25 watts and less
- 5 volt 4 amp - GAT-5V20W
- 12 volt 2 amp - GAT-12V24W
- 15 volt 1.66 amp - GAT-15v25w
- 19.5 volt 1.28 amp - GAT-19.5v25w
- 24 volt 1 amp - GAT-24v25w

POE POWER BUDGET

NOW YOU NEED TO CALCULATE TO TOTAL POWER BUDGET FOR YOUR POE SWITCH OR MIDSPAN

Port	Device	Budget (watts)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
Sum of all the Power for Total Budget		

Isn't there a calculator for things like this?

Why, yes, there is.

Download our free PoE Calculator app from the App or Google Play Store by scanning the QR code with your phone's camera.

Or visit us online at: https://www.poetexas.com/pages/poe-calculator

GET THE APP

PREPARE A BOM

Now that you've answered a lot of questions, you're ready to prepare your Bill of Materials to help you source all of your products!

Powered Devices (PD)	Qty	Price	Source
Power Supplying Equipment (PSE)			www.poetexas.com
Connecting Hardware			Patch panels, patch cables, racks, etc.
Cables			Category cable, pre terminated or with RJ-45 male jacks
Cable Management			Cable anchors or clips, ties
Hardware			Mounting brackets, anchoring screws and bolts

DON'T FORGET!

While you're at it, don't forget to make sure you have all the tools you'll need for the installation. There's nothing worse than having to go back for more tools!

Tool Kit Checklist:
You will not always need all of these tools, however, it's worth running through the list before you find yourself at Home Depot for the 10th time picking up that one "last thing".

Safety:

- ☐ Gloves
- ☐ Headlamp
- ☐ Step ladder (most ceilings are 9' high)
- ☐ Steel toed boots (required on construction sites)
- ☐ Safety glasses

Hand Tools:

- ☐ Pistol drill
- ☐ Bits
  - ☐ Philips heads
  - ☐ Flat heads
  - ☐ Torx heads
  - ☐ Anti-tamper Torx
  - ☐ Drill bits with chuck
- ☐ Battery charger
- ☐ Charged batteries
- ☐ RJ-45 Crimper
- ☐ Linesman's Pliers
- ☐ Punchdown tool
- ☐ Sharp pocket blade
- ☐ Hammer
- ☐ Staple gun
- ☐ Extension cord

Specialty Tools:

- ☐ Pull tape
- ☐ Lubricant (if in conduit)
- ☐ Continuity Tester
- ☐ Port Beacon
- ☐ PoE Tester
- ☐ USB Tester
- ☐ Laptop

YOUR POWER OVER ETHERNET PROS

WOULD YOU LIKE MORE HELP?

We pride ourselves in the level of customer support we're able to offer our customers. If you'd like more support on your project, feel free to contact us to speak with a PoE expert who can help you build your project.

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