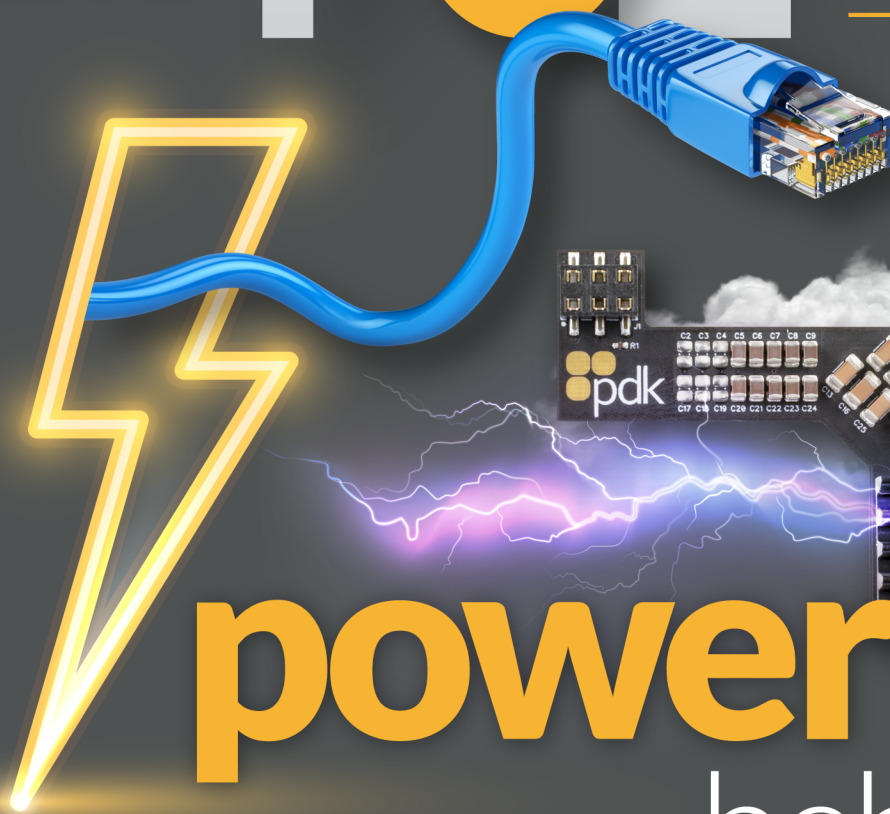the **PॐE**

power

behind

pdk™ + ◆VIGITRON

PDK offers several access door controllers that are powered by PoE (Power over Ethernet). PoE has many advantages simplifying installation by providing both power and data over a single cable. PoE power can be provided from remote locations eliminating the need to provide local power.

What is PoE? Power over Ethernet

However, the use of PoE involves several considerations which are not required when direct power is used. The ability to operate using PoE/IP connections is governed by standards set by IEEE (Institute of Electrical and Electronics Engineers). The standards not only set specific PoE source and connected device power levels known as Class, but also define the operational standards over 328 feet of Cat cable. These definitions also are part of the safety built into the standard to provide damage to connected devices.

Over years IEEE has updated these standards to meet the needs of IP/PoE for increased power.

Class	Usage	Clasfication current (mA)	Power range at PD (W)	Max power from PSE (W)	Class description
0	Default	0-5	0.44-12.94	15.4	Classification unimplemented
1	Optional	8-13	0.44-3.84	4.00	Very Low power
2	Optional	16-21	3.84-6.49	7.00	Low power
3	Optional	25--31	6.49-12.95	15.4	Mid power
4	Valid for Type 2 (802.3at) devices, not allowed for 802.3af devices	35-45	12.95-25.50	30	High power
5	Valid for Type 3 (802.3bt) devices	36-44 & 1-4	40 (4-pair)	45	
6		36-44 & 9-12	51 (4-pair)	60	
7	Valid for Type 4 (802.3bt) devices	36-44 & 17-20	62 (4-pair)	75	
8		36-44 & 26-30	71.3 (4-pair)	99	

PoE Classes define power ranges while the types define how power is delivered based on the number of wire pairs required. There are 8 PoE power classes and 4 different types.


access POWER

PoEapplications

PoE application can be confusing. Throughout its history the need for increased power occurred quicker than the ability of IEEE to respond. The result was product manufacturers taking matters into their own hands. This occurred twice. First when PoE source power needs increased from 802.3af at 15.4W source to 802.3at with a 30W source.

The second occurred when product manufacturers required more than a 30W source. This was a more complex process due to the power handling limitations of Cat wiring which is the transmission method for the standard. While waiting manufacturers started using a PoE source which became to be known as UPoE.

The standard developed by IEEE is known as 802.3bt. The problem is the method it uses to transmit PoE from a source and be received by a connected device is very different and INCOMPATIBLE with UPoE. The result is PoE sources that require UPoE sources are not compatible with those that require 802.3bt. This leads to confusion.
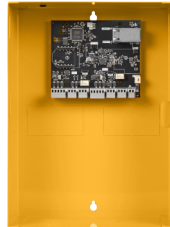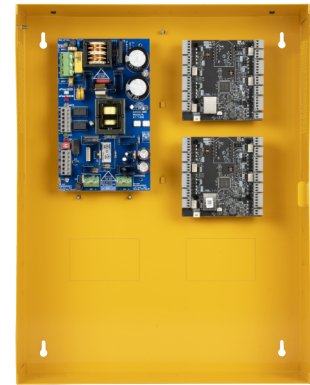
confusion

**PSE for UPoE
PoE to 74W**

802.3bt Device

UPoE Device

**PSE for 802.3bt
PoE to 90W**
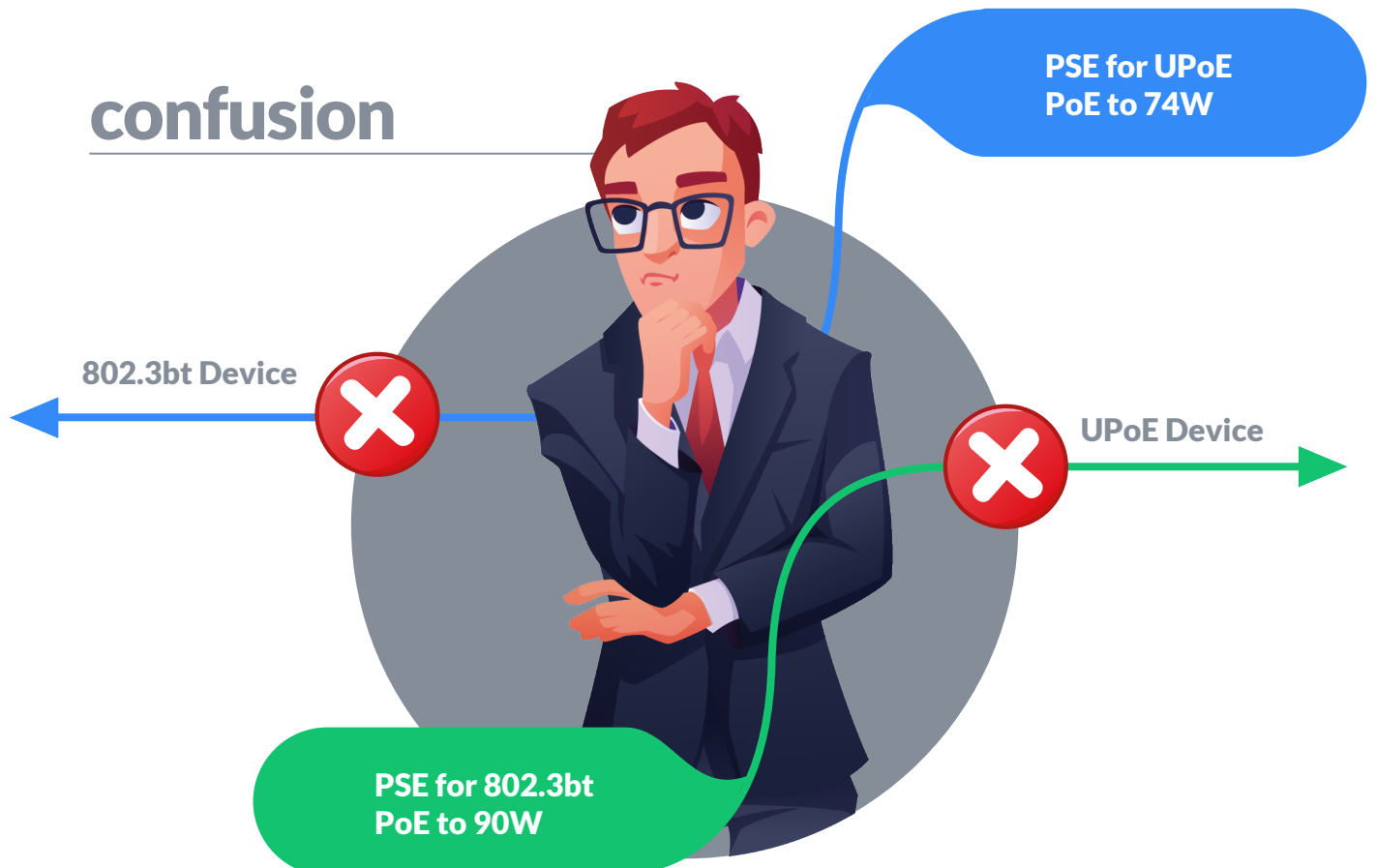
Red PoE controllers

![Red 1 one door controller — single channel]
![Red 2 two door controller — dual channel]
![Red 4 four door controller — four channel]
![Red 8 eight door controller — eight channel]

single channel | **dual channel** | **four channel** | **eight channel**

Each one of these requires an 802.3bt source along with different source power requirements

ProdataKey Model	802.af 11W @ 0.8amps	802.3at 24W @ 1.7amps	802.3bt 27W @ 2 amps Requires 802.3bt Source	49W @ 3.5amps Requires 802.3bt Source
	3.6-15.5W	15.5-30W	15.5-30W	
Red 1 one door controller	✔	✔	✔	✔
Red 2 two door controller	✔	✔	✔	✔
Red 4 four door controller	✔	✔	✔	✔
Red 8 eight door controller	✔	✔	✔	✔

Most important the source must be 802.3bt compatible

**PDK products have additional built in safety features.**
When first powering up, the PDK controller will request the amount of power based on the power detected by the source. This amount of power cannot be exceeded and will only operate to the limit of the provided. This gives the ability of PDK RED Controllers to operate over a wide range of installations without potential damage to the controller or connected devices.

Who is Vigitron and Why is PDK Partnering with them?
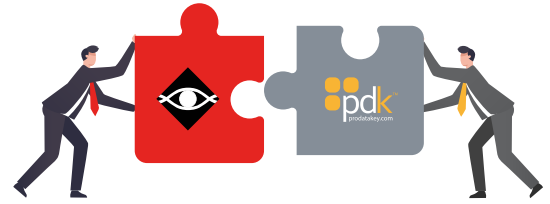
Vigitron is 27-year-old San Diego, California based company. Headquartered in its own 12,000 sq foot building.

Prior to the introduction of its IP/PoE Division, Vigitron led in the development of long-distance Video, Data and Power over Twisted Pairs cable. Its IP/PoE group started 12 years ago.

VIGITRON

1 ANALOG PRODUCTS

2 IP/PoE PRODUCTS

3 OEM PRODUCTS

4 FIRMWARE

5 SOFTWARE
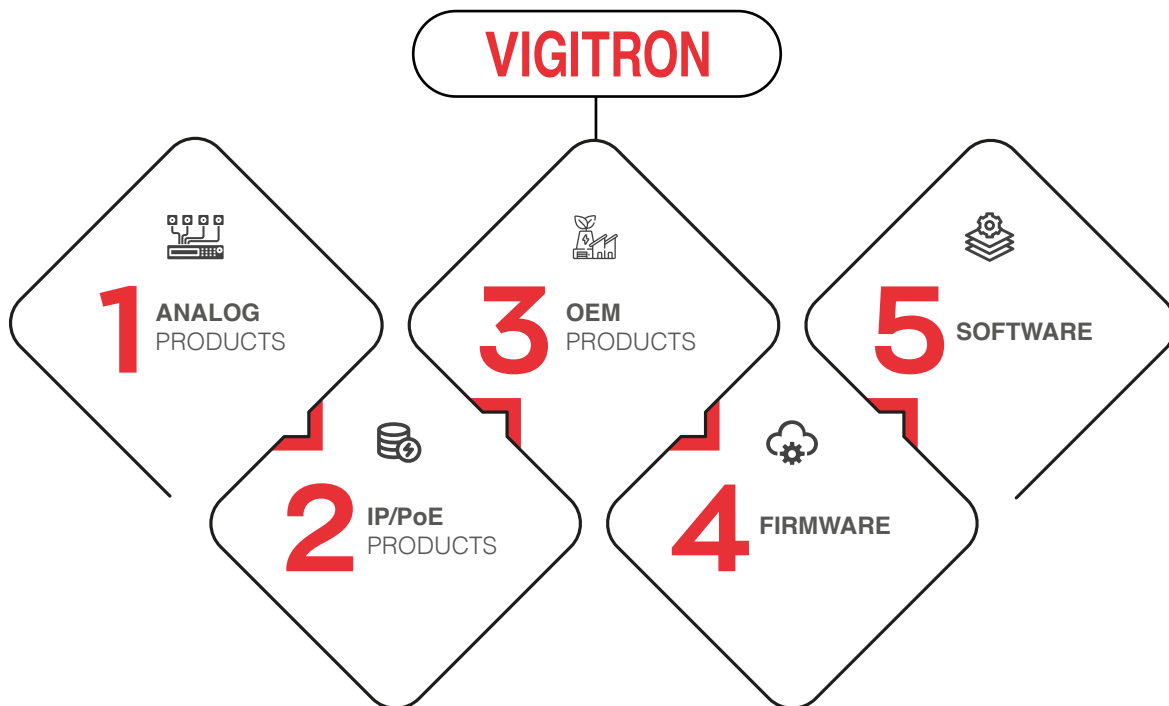
Today Vigitron has 5 operating engineering divisions. OEM products are provided as modules used in many of the leading security manufacturer products.

PDK's relationship with Vigitron came during the development of their RED product line. The companies worked together resulting in the most reliable cost-effective solutions covering a wide range of applications.

Vigitron – Overcoming Limitations

IEEE PoE was developed limited to a single type of cable, CAT cable which today can apply to Cat 5e, Cat 5, Cat 6a. It was developed to only operate over a specific distance, 328 feet, (100m).

Vigitron solutions provide 801.3bt solutions for the various types of cabling found in security applications. They are CAT or UTP, Coax and Fiber.

UTP Solutions

Vi22001U

Vi22401U

Coax Solutions

Vi30202U

Fiber Solutions

Vi5000U

In addition to PoE power sources, Vigitron can be found in Network switches and Midspans. Vigitron also provides a complete line of extenders eliminating the distance limitations.

Most important Vigitron maintains a Design Center staff of engineers who work with PDK in providing reliable and cost effective bills of materials reducing the potential for costly field service calls.

The service is provided free without obligation Contact Vigitron Technical Services at

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