Power Over Ethernet PD Modules
Introduction

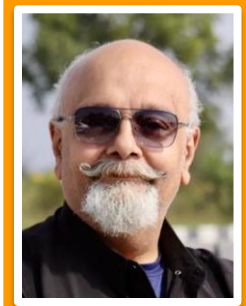
About Infomart

- Founded in 1993.
- HQ in Bangalore, India.
- Four core values – Integrity, Innovation, Quality, Customer Delight
- Designing and manufacturing Power Over Ethernet (POE) PD products since 2008.
- Won Lockheed Martin India Innovation Silver Medal for our POE products
- Our POE products are exported across the world and used on all seven continents including Antarctica.
- Our first product, the world's first high power POE splitter was also private labelled for Microsemi (Power Dsine) the inventors of POE technology

Key Personnel

Anjali Agarwal

Director & CFO



Devesh Agarwal

Managing Director and President

Alphonsa Rozario (Sheela)

General Manager

Value Chain

Engineering Team

INFOMART

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Why Power Over Ethernet PD Modules?

- **Enabling the customer to add value**
- Today, it is imperative, for customers to add value, in ***their*** product. This is typically the software stack and the processor.
- Our PoweredEthernet™ modules integrate the PoE logic, and power conversion analog functions into a single device, which offers customers a “plug and play” solution and allows them to focus their resources on their core competencies.
- It is equivalent to the power adapter brick of most information technology or consumer devices. End customers decide value on the device and it’s features, not on the power brick.
- We couple this approach with a highly reactive and nimble organization, which offer customization of standard products, and specialist advice.

Key features – PoweredEthernet™ modules

- Compliance to IEEE 802.3af/at/bt standards
- Full featured
- Our 802.3bt modules offer auto-class, built-in intelligent MPS (maintain power signature) and other power saving features within the standard.
- 1500V DC Isolation
- High efficiency
- Good thermal performance
- Compact size
- Low cost
- Low EMI
- Ability to customise or private label for larger volumes (>100K annually)

Product Matrix

Series	Part Numbers	Output Voltage Max. Power*	Benefits	External components
IEEE802.3af (13W) 1500V DC Isolation				
PEM1200AF **PEM1300AF** 	PEM12/1303AF/D PEM12/1305AF/D PEM12/1312AF/D PEM12/1324AF/D	3.3V, 12.95W 5V, 12.95W 12V, 12.95W 24V, 12.95W	PEM12xxAF series do not have on-board bridge rectifier PEM13xxAF series feature on-board bridge rectifier Low-Cost IEEE802.3af PD Module Dim: 52mm x 14mm, SIL Programable IEEE power class 0,1,2,3 support **Optional AFD model with in-built frequency dithering for improved EMI.**	12xxAF: Input TVS surge suppressor and bridge rectifiers. Output filter capacitor. 13xxAF: Input TVS surge suppressor. Output filter capacitor.
PEM1400 	PEM1403 PEM1405 PEM1412	3.3V, 12.95W 5V, 12.95W 12V, 12.95W	**World's smallest full power** 802.3af PD module. Dim: 35mm x 14mm, SIL Motherboard footprint of 399 mm² (0.62 sq. inches) 12.95W from all 3 voltage variants. Built-in frequency dithering for improved EMI Class 0 IEEE802.3af classification	Input surge suppressor and bridge rectifiers Output filter capacitor (inductor on the module)
PEM1500-LP 	PEM1505-LP PEM1512-LP	5V, 10W 12V, 12.95W	Self-contained IEEE802.3af PD Module, low profile Dim: 42mm x 42mm x 11mm, screw mount, most suited for IP camera IEEE802.3af Class programmable Wired input and output connectivity	Input surge suppressor
PEM1600 	PEM1603N/R PEM1605N/R PEM1612N/R PEM1619N/R PEM1624N/R	3.3V, 12.95W 5V, 12.95W 12V, 12.95W 19V, 12.95W 24V, 12.95W	Low-Cost IEEE802.3af PD Module Dim: 52mm x 14mm, SIL On-board surge suppressor Built-in frequency dithering for improved EMI. Dedicated pin for additional EMI filtration. Output inductor optional at customer choice	N: Input TVS surge suppressor and bridge rectifiers. Output filter capacitor. R: Input TVS surge suppressor. Output filter capacitor.
IEEE802.3at (30W) 1500V DC Isolation				
PEM3200 	PEM3212 PEM3219 PEM3224	12V, 30W 19V, 30W 24V, 30W	Low cost, small size IEEE802.3at PD module, POE Class 4 Dim: 62mm x 14mm, SIL 802.3.at detect pin for Layer 2 support Frequency dithering, Frequency Adjust Dedicated pin for Auxiliary Power, Remote Shut down, EMI filtration.	Input surge suppressor and bridge rectifiers Output filter capacitor (inductor on the module)

* IEEE802.3af devices Maximum Power at Nominal Voltage. For IEEE802.3at and 802.3bt Maximum power at maximum input voltage

Product Matrix

Series	Part Numbers	Output Voltage Max. Power*	Benefits	External components
IEEE802.3bt (up to 60W) 1500V DC Isolation				
PEM6300** (In development) 	PEM6312 PEM6320 PEM6324	12V, 60W 20V, 60W 24V, 60W	Small Size IEEE802.3bt PD module. 14mm height. SIL package. PSE Type 3 PD Class 6 High efficiency > 90% Frequency dithering for improved EMI Auto-class support, low power MPS (Maintain Power Signature), Wall Adapter, Power Class and PSE reporting, Power Demotion, Phihong injector support	Input TVS surge suppressor and bridge rectifiers. Output filter capacitor(s). Optional input and EMI filtering capacitors
IEEE802.3bt (up to 90W) 1500V DC Isolation				
PEM9300BT 	PEM9312BT PEM9320BT PEM9324BT	12V, 90W 20V, 90W 24V, 90W	IEEE802.3bt PD module PSE Type 4 PD Class 8 **Smallest 90W .bt module using conventional**. 70Lx29Wx14H mm. DIL package. High efficiency > 92% . Auto-class support, low power MPS (Maintain Power Signature), Wall Adapter, Power Class and PSE reporting, Power Demotion, Phihong injector support	Input TVS surge suppressor and bridge rectifiers. Output filter capacitor(s). Optional input and EMI filtering capacitors
All-in-one complete plug and play POE PD board, including Data Transformer. No external components required				
PEM9300BT 	PEB9312BT PEB9320BT PEB9324BT	12V, 90W 20V, 90W 24V, 90W	IEEE802.3bt Type 4 Class 8 POE PD all-in-one-board. Fully “Plug and Play”. No external components required. Gigabit Ethernet support, pass through data. Auto-class function support In-built auxiliary wall adapter support Alternate signature for Phihong injectors Frequency dithering for improved EMI High Efficiency, end to end >93%	No external components
POE Splitter Device				
PES40 	PES4012GPC0 PES4015GPC0 PES4018GPC0 PES4021GPC0 PES4024GPC0	12V, 27W 15V, 27W 18V, 27W 21V, 27W 24V, 27W	Standalone POE PD Splitter IEEE802.3af Class 4, with exception of higher current input FCC Class B Part 15 and EN55022 (CISPR 22) Class B ESD: EN61000-4-2, RS: EN61000-4-3, CS: EN61000-4-6 10/100/1000 (Gigabit) Ethernet support Dim: 94mm x 73mm x 31mm; Weight:144 g (0.317 lb, 5.01 oz) Rugged polycarbonate enclosure Instantly POE enable the non-POE devices MOQ 2500 applies	No external components

* IEEE802.3af devices Maximum Power at Nominal Voltage. For IEEE802.3at and 802.3bt Maximum power at maximum input voltage

** Under development

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IEEE 802.3 Power Levels and Classes

IEEE 802.3 Power levels and Classifications for POE Powered Devices

IEEE Standard	Common Name	PD Class	PD / PSE Type	Max num. of events	PD Power[1]	PSE Power[2]	Wire pairs energised	AUC[3]
802.3af	POE	0	1	-	12.95W	15.4W	2	No Support
802.3af	POE	1	1	1	3.84W	4W	2	No Support
802.3af	POE	2	1	1	6.49W	7W	2	No Support
802.3af	POE	3	1	1	12.95W	15.4W	2	No Support
802.3at	POE+	4	2	2	25.5W	30W	2	No Support
802.3bt	POE++	5	3	4	38.25W	45W	4	Optional
802.3bt	POE++	6	3	4	51W	60W	4	Optional
802.3bt	POE+++	7	4	5	62W	75W	4	Optional
802.3bt	POE+++	8	4	5	71.3W	90W	4	Optional

[1] Min. power delivered to PD / Module input. Max. PD / module output depends on operating conditions

[2] Power delivered from the Power Sourcing Equipment (PSE) (switch or injector) at its output port

[3] Auto Class is supported. It is optional to enable or not.

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PoweredEthernet™ product numbering

PE	Powered Ethernet
Type	• M = Module • B = All in one board
Power Level	• 1 = IEEE 802.3af (13W) 3 = IEEE802.3at (30W) • 6 = IEEE 802.3bt (60W) 9 = IEEE802.3bt (85W)
Model series	• Sequential from 0 to 9, A to Z
Output Voltage	• 03 = 3.3V • 05 = 5V • 12 = 12V • 20 = 20V • 24 = 24V