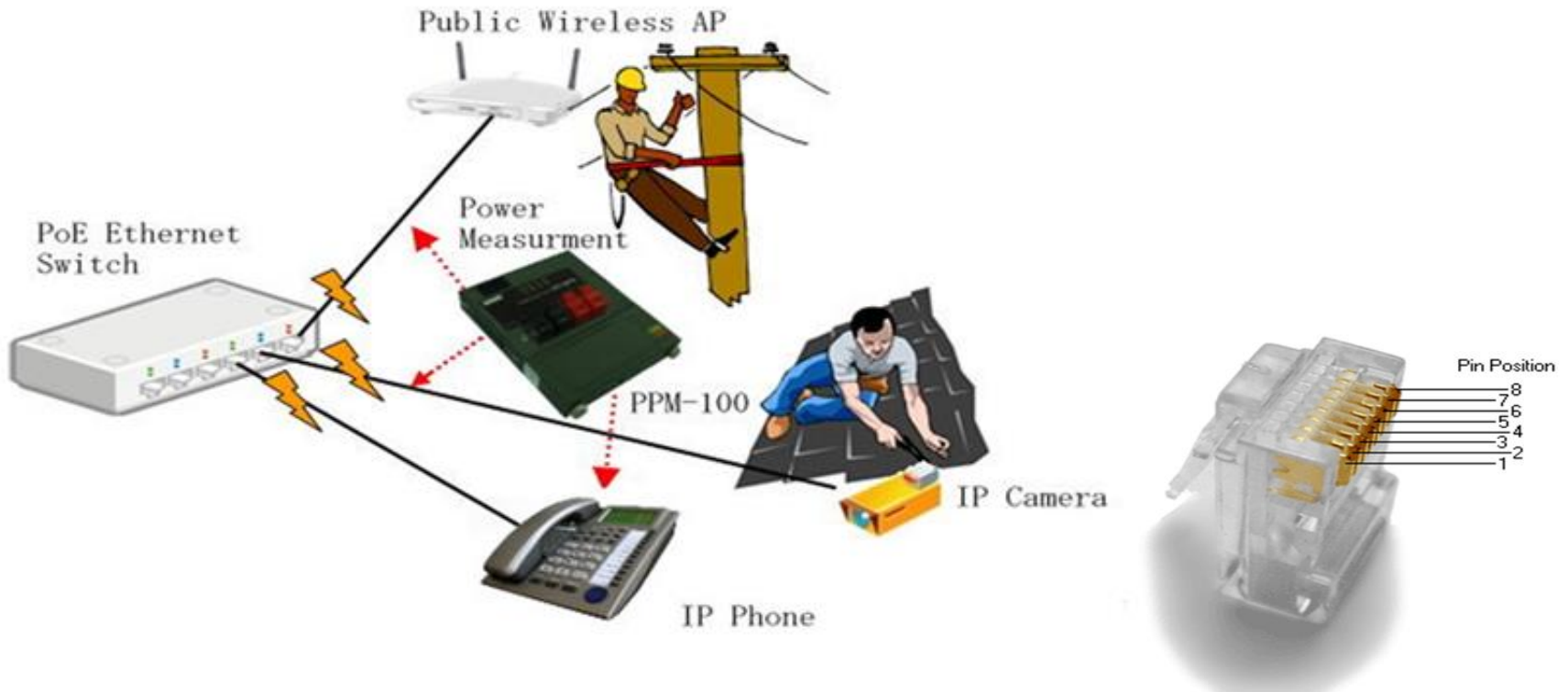


PoE + LAN Extender

Yoda Communications, Inc.



Power over Ethernet is emerging...

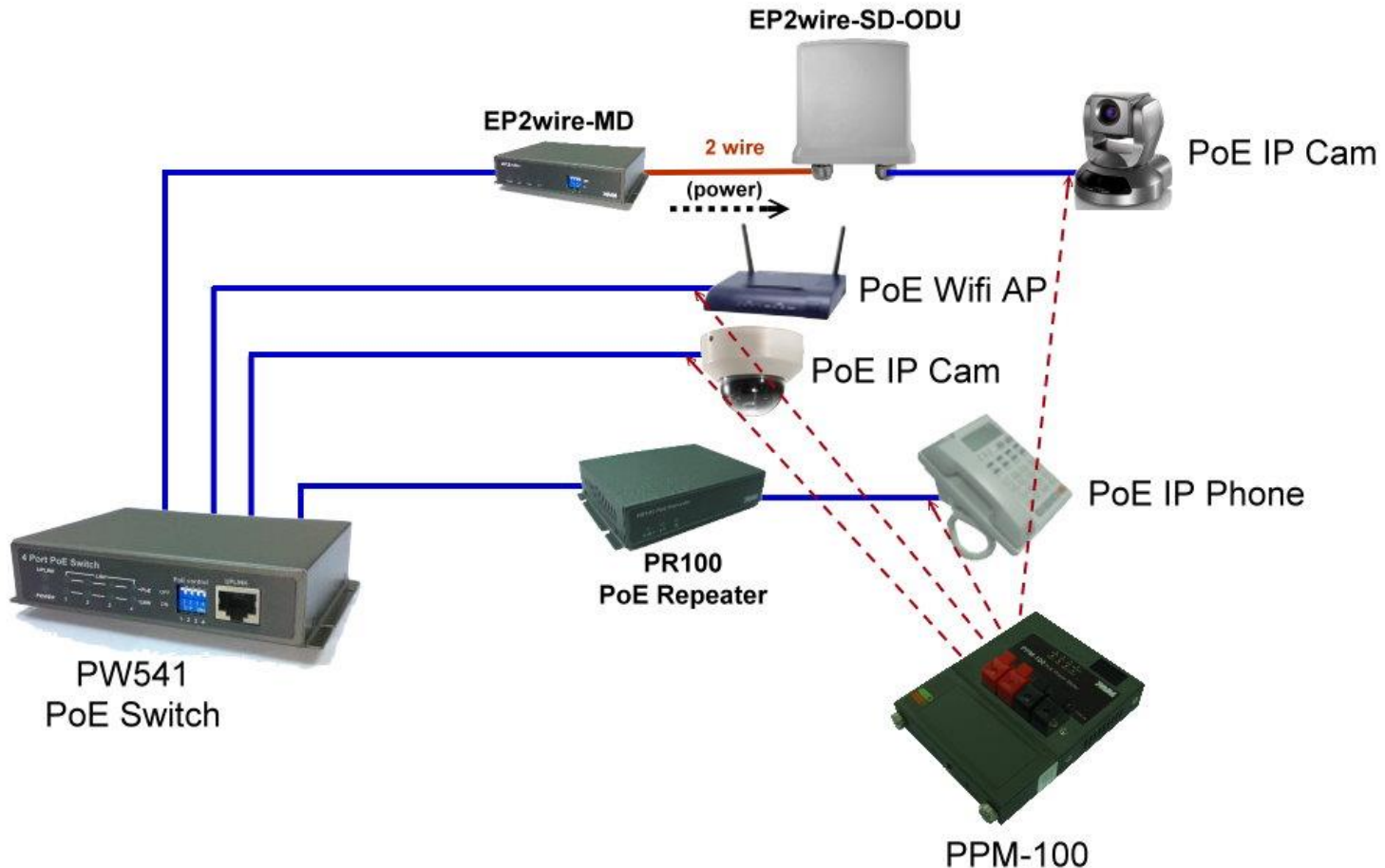


Mid-span PoE PSE (Cisco in 2000)

→ IEEE 802.3af/15w (2003) → IEEE 802.3at/30w (2009)

→ IEEE 802.3bt (pending) /Ultra /PoE++
60w / 90w /120w over 4-pair PSE

PoE Switch for PoE-enabled CPEs



PoE Power Meter PPM-100v2



Main Features:

- *IEEE 802.3at/af, Ultra PoE
 - *2-pair /4-pair
 - *Over Temp Protection
 - *Portable with chargeable Battery
- Optional IEEE 802.3bt
60w/100w

PSE PoE Switch IEEE 802.3bt 60w/100w

◆ Gigabit Ethernet PoE (802.3bt/at/af)

❖ PSE PD Detection

- PU842G (2p), PU804G (4p), PU1608G (8p), PU2412G (12p)
- DU642GF (1E 6p GE, 4p 60w, 2p SFP)

❖ Adjustable Always-On Un-managed

- PW541UG (4p GE, 4p 30w/60w)



PSE PoE Switch 802.3at/af 4~24p

◆ Gigabit Ethernet

❖ Layer 2 Managed

- PS800GM, PS1602GM(16p), PS2400GM (24p)

❖ Un-managed

- PS1600G(16p), PS2420G/PS2400G (24p)
- PS804G/800G/GA, PS800GE, PS802G/GA
- PS541Gi

◆ VLAN Option

◆ Fast Ethernet

❖ Managed PW800M, PS2400M

❖ Un-managed

- PS541i,
- PS800, PS804, PS981, PS802 (8FE+2GE)
- PS1600, PS1602, PS2400



PSxxx series with 65w~630w power

4p PoE	PoE Sw itch		IEEE 802.3at/af							
			10/100M			10/100/1000M				
	Mode	LAN	FE	PoE	60w	GE	UTP	SFP	PoE	60w
PS541G	A	5				5	5		4	
PS804i	A	8	8	4						
PS804	A	8	8	4						
PS804G	A	8				8	8		4	
PS842GB	A+B	8				8	8		6	2
8p PoE	PoE Sw itch		IEEE 802.3at/af							
			10/100M			10/100/1000M				
	Mode	LAN	FE	PoE	60w	GE	UTP	SFP	PoE	60w
PS800	A	8	8	8						
PS981	A	9	9	8						
PS801	A	9	8	8		1	1			
PS810	A	9	8	8		1		1		
PS811	A	10	8	8		2	1	1		
PS802	A	10	8	8		2	2			
PS800G	A	8				8	8		8	
PS802G	A	10				10	8	2	8	
16p PoE	PoE Sw itch		IEEE 802.3at/af							
			10/100M			10/100/1000M				
	Mode	LAN	FE	PoE		GE	UTP	SFP	PoE	
PS1600	A	16	16	16						
PS1600G	A	16				16	16		16	
PS1602	A	18	16	16		2	2	2		
PS1602G	A	18				18	16	2	16	
24p PoE	PoE Sw itch		IEEE 802.3at/af							
			10/100M			10/100/1000M				
	Mode	LAN	FE	PoE		GE	UTP	SFP	PoE	
PS2400	A	26	24	24		2	2	2		
PS2400G	A	24				24	24		24	
PS2420G	A	26				26	24	2	24	
PS2402G	A	26				26	26		24	

Adjustable Always-On PoE Switch 2~32p

◆ Mid-span PoE On/Off

❖ Gigabit Uplink

- PW801/PW811/PW802
- PW1601/PW1602/PW1611
- PW2402/PW2422/PW2420
- PW3202

❖ All Fast Ethernet

- PW321
- PW541/PW541i/PW804i
- PW800E/PW800/PW981
- PW1600E/PW1600

◆ Power Budget of 65w~760W



PWxxx series with 65w~760w power

2p PoE	PoE Sw itch		IEEE 802.3at/af							
	Mode	LAN	10/100M			10/100/1000M				
			FE	PoE	60w	GE	UTP	SFP	PoE	60w
PW321	B	3	3	2	2					
4p PoE	PoE Sw itch		IEEE 802.3at/af							
	Mode	LAN	10/100M			10/100/1000M				
			FE	PoE	60w	GE	UTP	SFP	PoE	60w
PW541	B	5	5	4	4					
PW541A	A	5	5	4						
PW541G	A	5				5	5		4	
PW541UG	A+B	5				5	5		4	4
PW541GB	A+B	5				5	5		4	4
8p PoE	PoE Sw itch		IEEE 802.3at/af							
	Mode	LAN	10/100M			10/100/1000M				
			FE	PoE	60w	GE	UTP	SFP	PoE	60w
PW800	B	8	8	8						
PW981	B	9	9	8						
PW801	B	9	8	8		1	1			
PW810	B	9	8	8		1		1		
PW811	B	10	8	8		2	1	1		
PW802	B	10	8	8		2	2			
16p PoE	PoE Sw itch		IEEE 802.3at/af							
	Mode	LAN	10/100M			10/100/1000M				
			FE	PoE	60w	GE	UTP	SFP	PoE	60w
PW1600	B	16	16	16						
PW1601	B	17	16	16		1	1			
PW1610	B	17	16	16		2		1		
PW1611	B	18	16	16		2	1	1		
PW1602	B	18	16	16		2	2			
24p PoE	PoE Sw itch		IEEE 802.3at/af							
	Mode	LAN	10/100M			10/100/1000M				
			FE	PoE		GE	UTP	SFP	PoE	
PW2402	B	26	24	24		2	2			
PW2420	B	28	24	24		2		2		
PW2422	B	28	24	24		4	2	2		
32p PoE	PoE Sw itch		IEEE 802.3at/af							
	Mode	LAN	10/100M			10/100/1000M				
			FE	PoE		GE	UTP	SFP	PoE	
PW3202	B	34	32	32		2	2			

Mid-span PoE Hub with 120~760w power

◆ GbE 10/100/1000M

❖ Mid-span

➤ PH-2400G (24p)

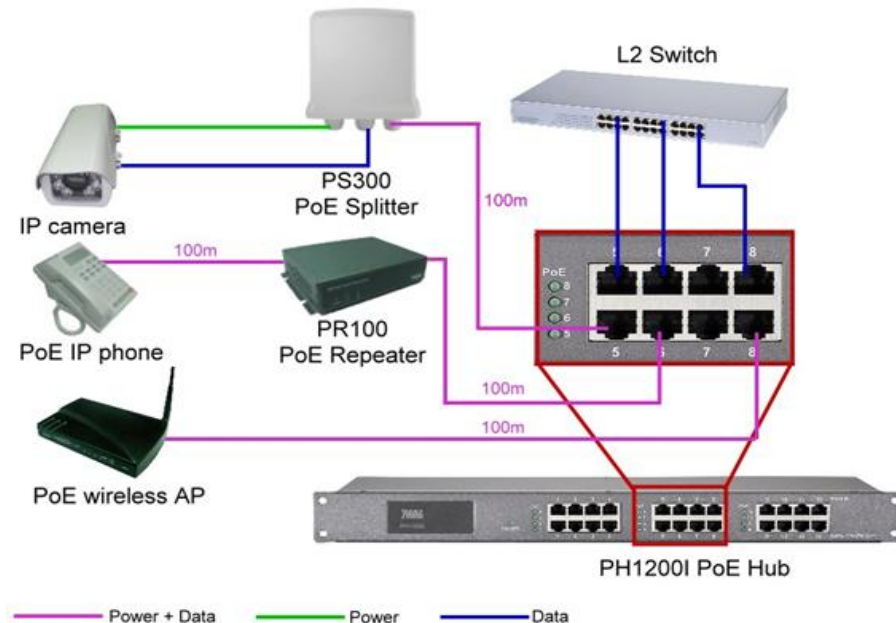


◆ FE 10/100M

❖ Mid-span

➤ PH-1200I (12p)

➤ PH-2400I (24p)



PWxxx-24V series with 24w~760w power

2p PoE	PoE Sw itch		IEEE 802.3at/af							
	Mode	LAN	10/100M			10/100/1000M				
			FE	PoE	60w	GE	UTP	SFP	PoE	60w
PW321	B	3	3	2	2					
4p PoE	PoE Sw itch		IEEE 802.3at/af							
	Mode	LAN	10/100M			10/100/1000M				
			FE	PoE	60w	GE	UTP	SFP	PoE	60w
PW541	B	5	5	4	4					
PW541A	A	5	5	4						
PW541G	A	5				5	5		4	
PW541UG	A+B	5				5	5		4	4
PW541GB	A+B	5				5	5		4	4
8p PoE	PoE Sw itch		IEEE 802.3at/af							
	Mode	LAN	10/100M			10/100/1000M				
			FE	PoE	60w	GE	UTP	SFP	PoE	60w
PW800	B	8	8	8						
PW981	B	9	9	8						
PW801	B	9	8	8		1	1			
PW810	B	9	8	8		1		1		
PW811	B	10	8	8		2	1	1		
PW802	B	10	8	8		2	2			
16p PoE	PoE Sw itch		IEEE 802.3at/af							
	Mode	LAN	10/100M			10/100/1000M				
			FE	PoE	60w	GE	UTP	SFP	PoE	60w
PW1600	B	16	16	16						
PW1601	B	17	16	16		1	1			
PW1610	B	17	16	16		2		1		
PW1611	B	18	16	16		2	1	1		
PW1602	B	18	16	16		2	2			
24p PoE	PoE Sw itch		IEEE 802.3at/af							
	Mode	LAN	10/100M			10/100/1000M				
			FE	PoE		GE	UTP	SFP	PoE	
PW2402	B	26	24	24		2	2			
PW2420	B	28	24	24		2		2		
PW2422	B	28	24	24		4	2	2		
32p PoE	PoE Sw itch		IEEE 802.3at/af							
	Mode	LAN	10/100M			10/100/1000M				
			FE	PoE		GE	UTP	SFP	PoE	
PW3202	B	34	32	32		2	2			

24VDC Mid-span PoE Switch/Hub

◆ Patch Panel Hub

- PH2400G-24v (24p)
- PH2400I-24v (24p)
- PH1200I-24v (12p)

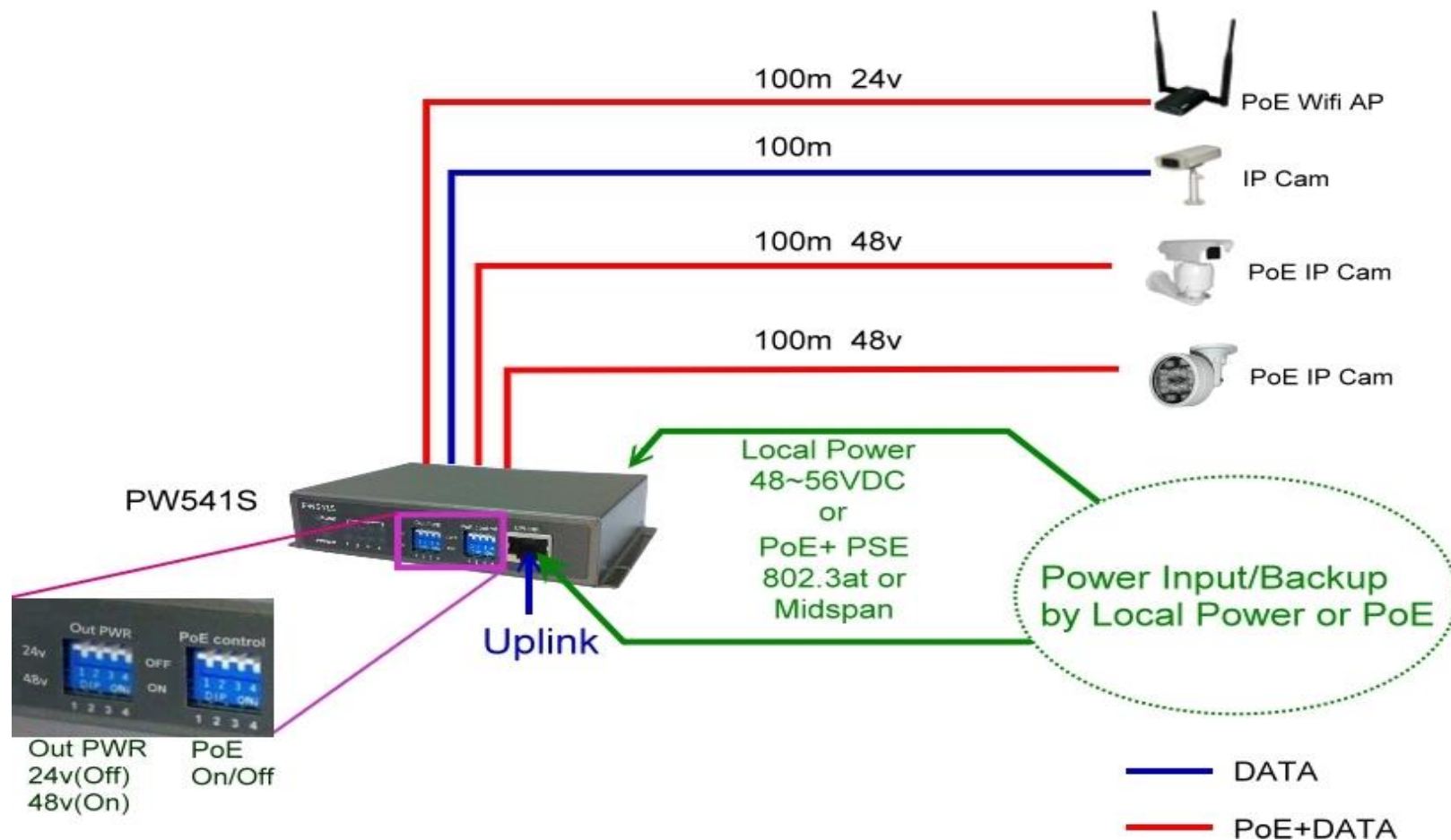


◆ PoE Switch (1~32p)

- ❖ Web Smart Managed PW800M/PW800ME-24v (8p)
- ❖ DIP Selectable 24v/48v PW541S
- ❖ Un-managed
 - PI300-24v (1p), PW321-24v(2p), PW541-24v(4p)
 - PW800/PW801/PW810/PW811/PW802-24v(8p)
 - PW1600E/PW1600I-24v(16p),
PW1601/PW1610/PW1611/PW1602-24v(16p),
PW2422/PW2402/PW2420/PW3202-24v(32p)



PW541S for 24V/48V PoE output



Adjustable Always-On PoE for any DC power

Adjustable PoE Switch

PoE Port	Ext. 65w	Ext. 90w	Ext. 120w	Uplink Port	Int. 250w	Int. 120w	Int. 65w	PoE Port
4 Ports	PW541	PW541N	PW541H	1 X FE				
8 Ports	PW800EL	PW800EN	PW800E	N/A	PW800A	PW800	PW800L	8 Ports
8 Ports	PW801EL	PW801EN	PW801E	1 x GE	PW801A	PW801	PW801L	8 Ports
8 Ports	PW802EL	PW802EN	PW802E	2 x GE	PW802A	PW802	PW802L	8 Ports
8 Ports	PW811EL	PW811EN	PW811E	2 x GE	PW811A	PW811	PW811L	8 Ports
16 Ports		PW1600EN	PW1600E	N/A	PW1600	PW1600L		16 Ports
16 Ports		PW1601EN	PW1601E	1 x GE	PW1601	PW1600L		16 Ports
16 Ports		PW1602EN	PW1602E	2 x GE	PW1602	PW1602L		16 Ports
16 Ports		PW1611EN	PW1611E	2 x GE	PW1611	PW1602L		16 Ports
				2 x GE	PW2402	PW2402L		24 Ports

✱ For Any DC Power

Advantages:
 *Green Energy Saving Design (On/Off DIP)
 *Provide 80% Power Budget Usage Monitoring (PW1601 series)
 ✱ Optional 24VDC Power Supported ✱



Injector (PSE)

◆ GbE 10/100/1000M

❖ End-point PSE

- DI100G (30w, -40~75C, voltage booster)
- PI-100GA, PI-100GF

❖ Mid-span PSE

- PI-100GH

◆ FE 10/100M

❖ End-point PSE

- PI-100A (30w), PI-100F (15.4w)

❖ Mid-span PSE

- PI-100 (19w), PI100H (30w)



60/90/120w Ultra PoE PSE 4-wire

◆ GbE 10/100/1000M

- ❖ 4-pair PD detection with 60/90/120w
 - DI100G-60w, 90w (-40~75C)
 - PU100GA, PU100GX, PI300GA
- ❖ 4-pair Always-On PoE
 - PU100GH, PI100GH



Industrial Grade Managed PoE Switch

◆ PoE models (16/8+2G, 7+3G, 4+2G, 8)

- ❖ Voltage Booster
- ❖ IEC-61850 (power station)
- ❖ UL, DNV (marine)
- ❖ EN-50155 (M12 for in-vehicles app)
- ❖ Hardware Environmental Monitoring
- ❖ Adv-Ring2 protection vs G.8032 ERPS



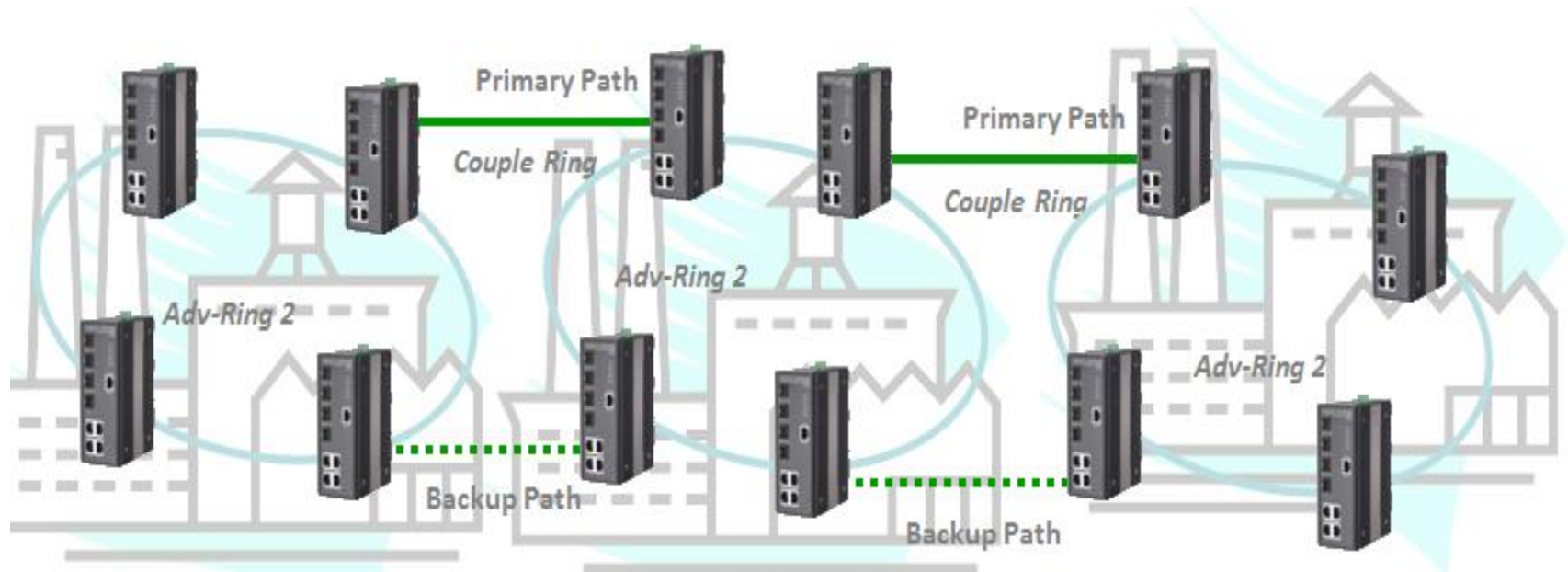
◆ Non-PoE models(16+2G, 8+2G, 7+3G, 8)

- ❖ IEC-61850 (power station)
- ❖ UL, DNV (marine)
- ❖ EN-50155 (M12 for in-vehicles app)
- ❖ Hardware Environmental Monitoring
- ❖ Adv-Ring2 protection vs G.8032 ERPS



Industrial Grade Managed PoE Switch

- Super Recovery time < 10ms
- G.8032 ERPS compliant
- Support up to 200 Ethernet switches in one topology
- Support Multi-Redundant & Redundant Chains



Industrial Grade Un-Managed Switch

◆ PoE Switch/ Injector/ Media Converter

- ❖ Voltage Booster
- ❖ Ultra 60w
- ❖ EN-50155, M12 Connector
- ❖ UL

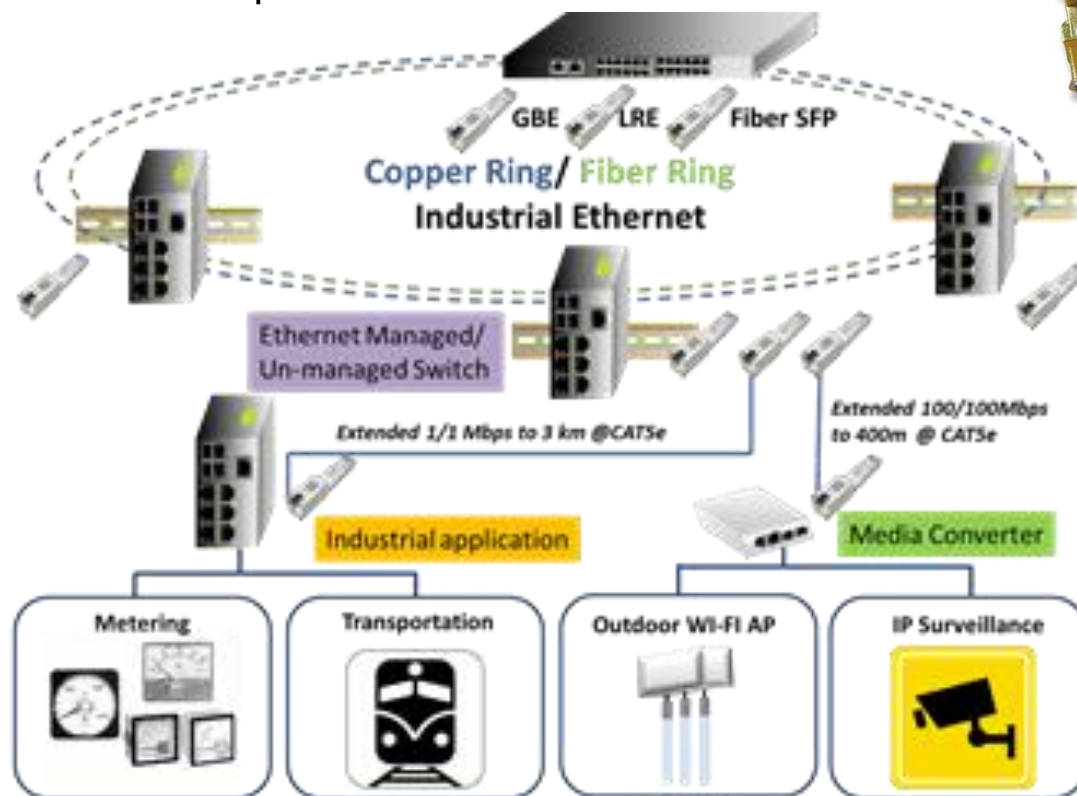
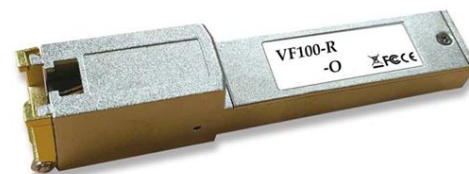
◆ Non-PoE Switch



LREoVDSL SFP Extender

◆ VF100

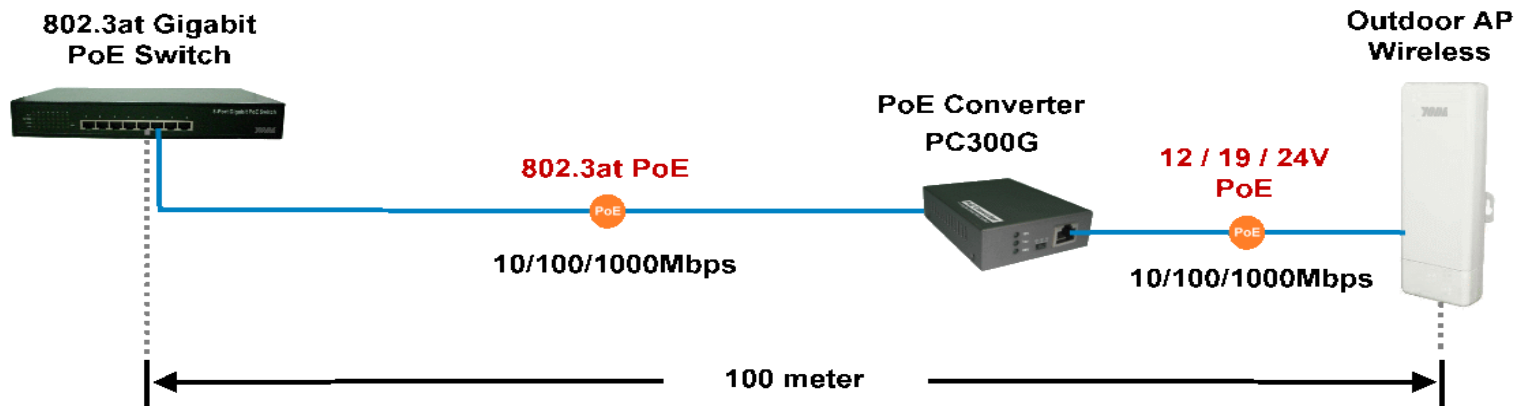
- ❖ MSA compliant SFP pluggable module (gigabit)
- ❖ P2P for 100m/150M or 500m/100Mbps full duplex
- ❖ Operation temperature : -20~85°C



PoE Converter 802.3at/af → 12/19/24v PoE

◆ GbE 10/100/1000M

❖ PC300G (802.3at/af/midspan → 12/19/24v PoE out)



PoE Splitter & PD module

◆ GbE 10/100/1000M

❖ Splitter

- PS213GP (PoE+DC out)
- PS103G (5/9/12V)
- PS203G (12/19/24V)
- PS103EG (802.3af)



◆ FE 10/100M

❖ 802.3af splitter

- PS-103E , P-100PD

❖ Mid-span splitter

- PS300 (30w)
- PS300A (24VAC)



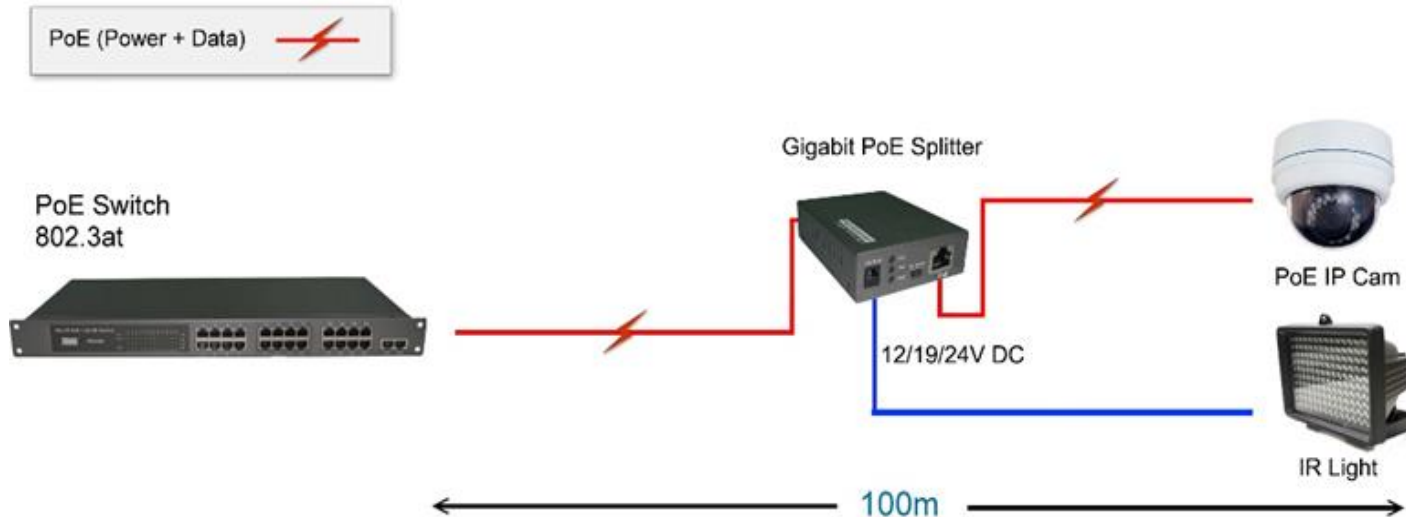
◆ PSE/PD Module

- PS300M (30w)
- PM-100/ PM101 (10w, isolation)
- PM-100A (25w, 802.3at)



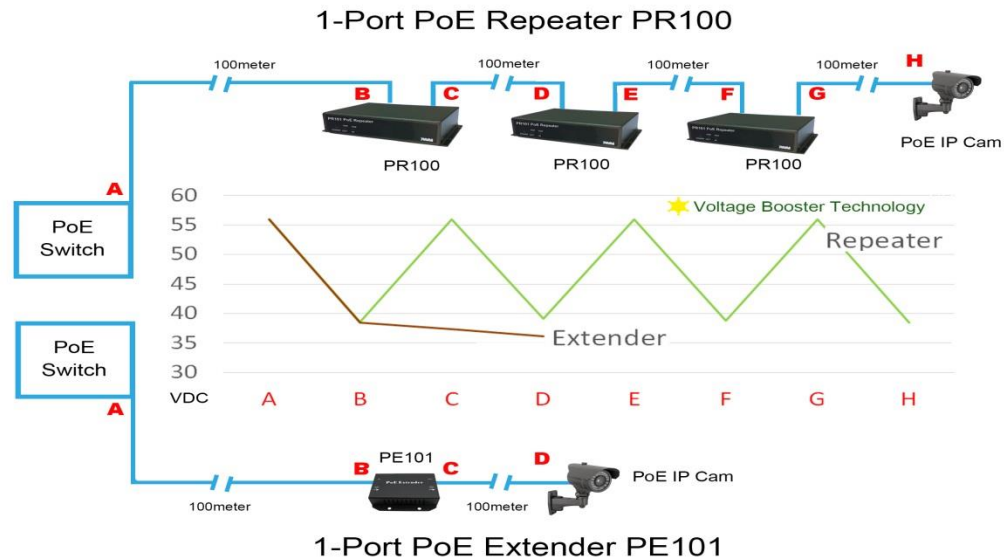
Special PoE Splitter PS213GP

- ◆ GbE 10/100/1000M
- ◆ PoE x1
- ◆ 12/19/24V DC output
- ◆ 2A/25w maximal output

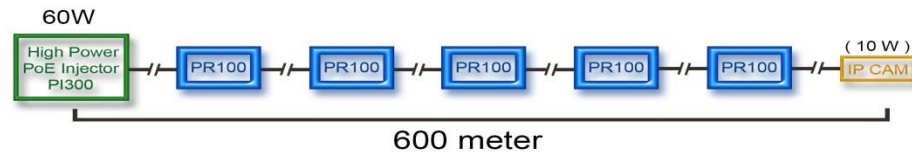


PoE Repeater vs PoE Extender

PoE Repeater vs PoE Extender



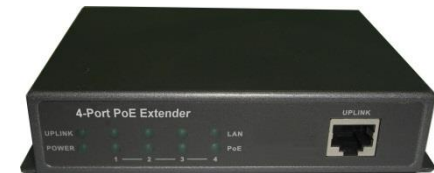
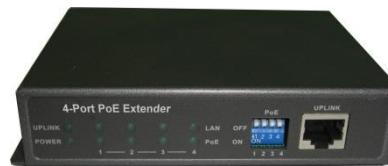
Applications for Long Reach PoE Device



Multiple PR100 allow a PoE IP Cam to be located 600m away from a PoE Injector

PoE Extender

- ❖ 802.3at/af/Mid-span input → Mid-span
 - PE101 (1p in 1p out), PE101A (PD detection)
 - PE102 (1p in 2p out)
 - PE104 (1p in 4p out, DIP SW PoE On/Off)
 - PE104A (1p in 4p out, 802.3at PD detection)
 - PE104S (1p in 4p out, 24/48v PoE On/Off)
 - PE104G (1p in 4p out, gigabit, PoE On/Off)



PoE (Power + Data)



PoE Switch
802.3at



PE101



PoE Extender

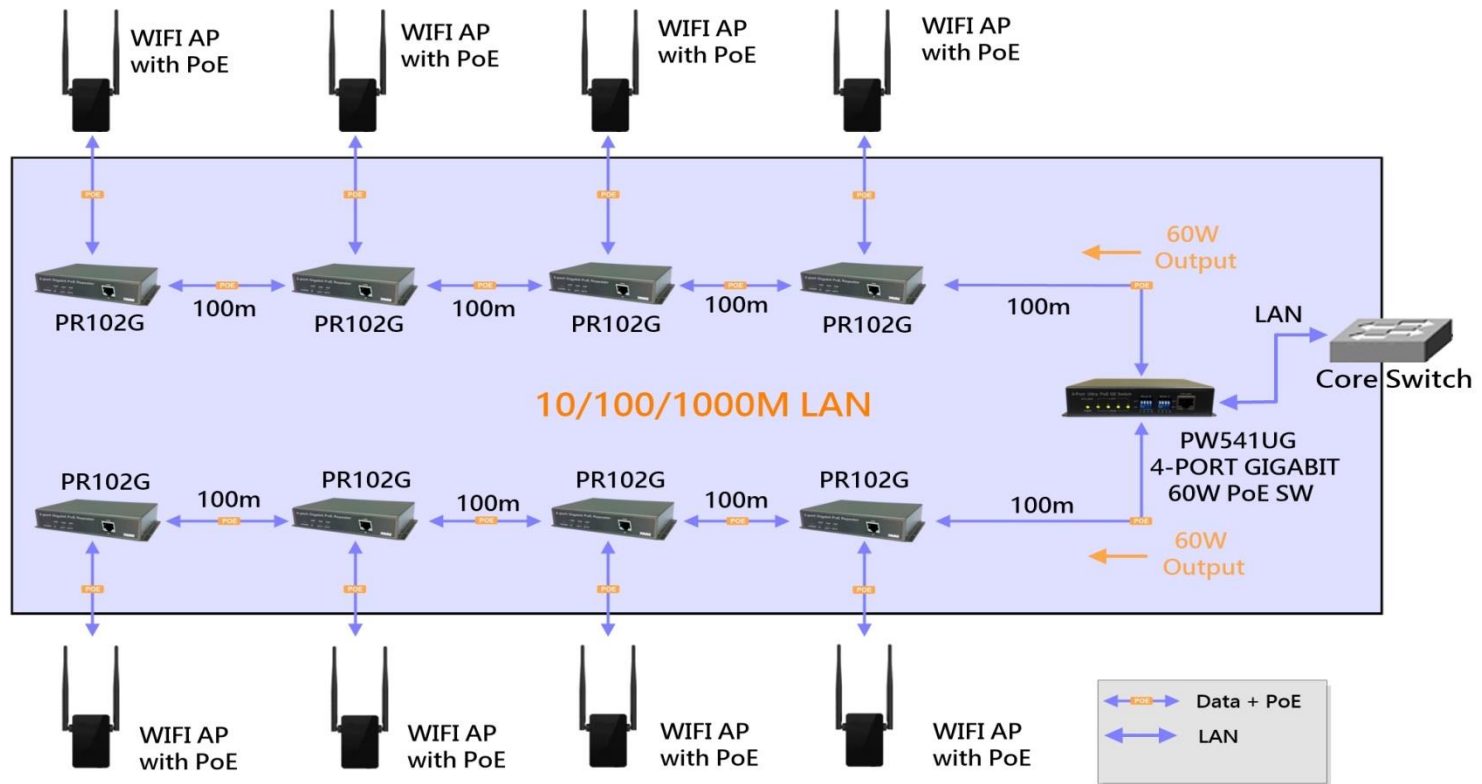


PoE IP Cam

← 100m → ← 100m →

PoE Repeater

◆ FE or GE, 1-port or 2-port



Airport, Shopping Mall, Campus, etc...

PoE Repeater

◆ GbE 10/100/1000M

- ❖ 802.3af & Mid-span input → Mid-span (out)
 - PR100G/-ODU (1p), PR102G/-ODU (2p)
- ❖ 802.3at & Mid-span input → Mid-span (out)
 - PR100GA/-ODU (1p), PR102GA/-ODU (2p)
 - Wide Temp PI100GAI



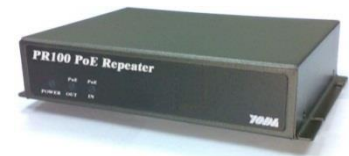
◆ FE 10/100M

- ❖ 802.3af or Mid-span input → Mid-span (out)
 - PR100/-ODU (1p), PR102/-ODU (2p)
- ❖ 802.3at or Mid-span input → Mid-span (out)
 - PR100A/-ODU (1p), PR102A/-ODU (2p)



◆ EP2wire/LP/ODU kit over 2-wire/8-wire

◆ EP2coax/LP/ODU kit over coax



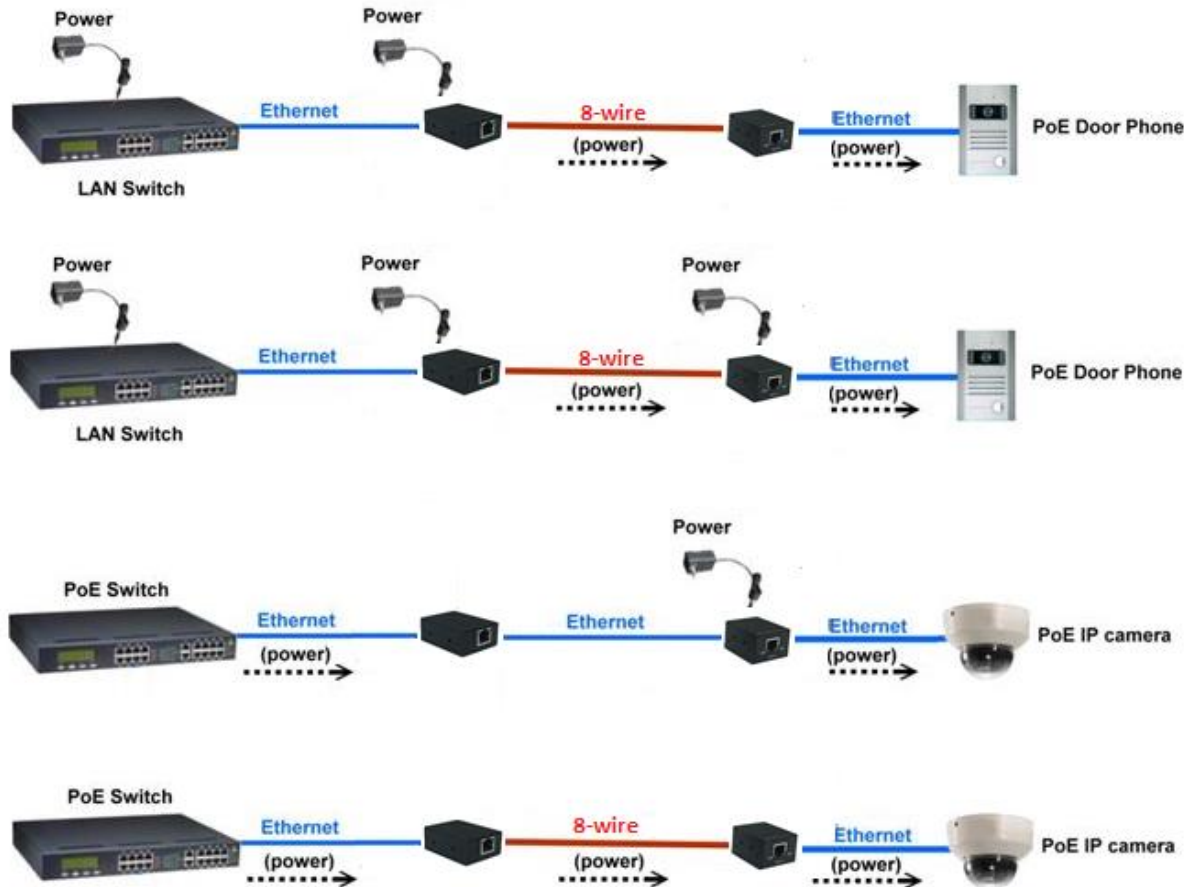
LAN + PoE Repeater over 2-wire

◆ EP2wire/LP/ODU kit over 2-wire



LAN + PoE Extender over Cat6

- ◆ EP600: 600 meter over Cat6 with 26Mbps throughput



LAN + PoE Repeater over Cat6

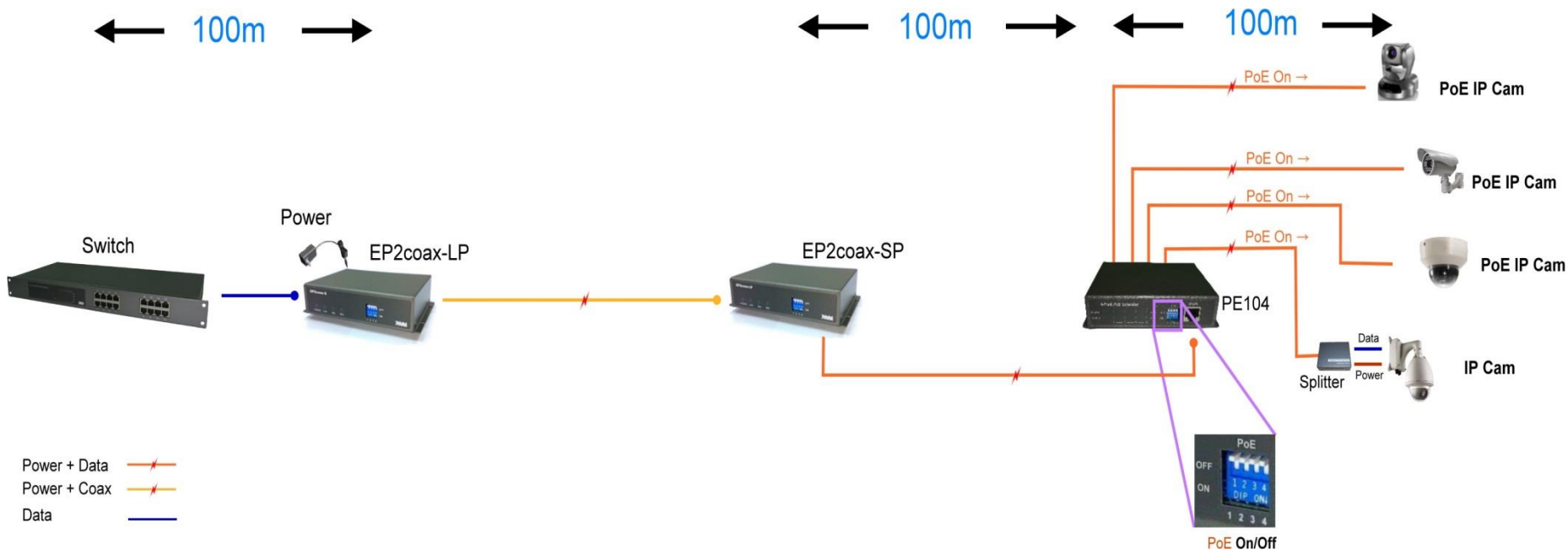
※ EP500

- 500 meter over Cat6 with PoE 30w output
- 200Mbps throughput



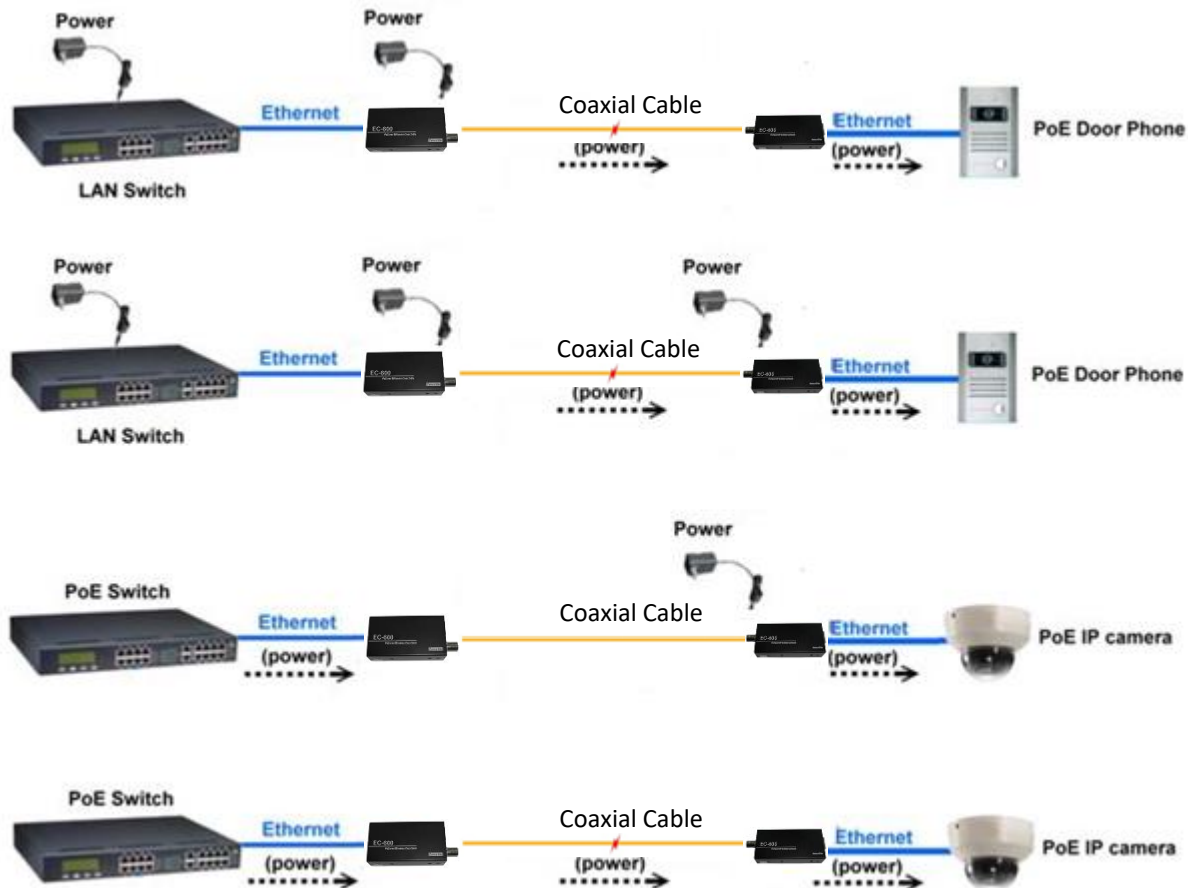
PoE Repeater over Coax

◆ EP2coax/LP/ODU kit over coax



PoE Extender over Coax

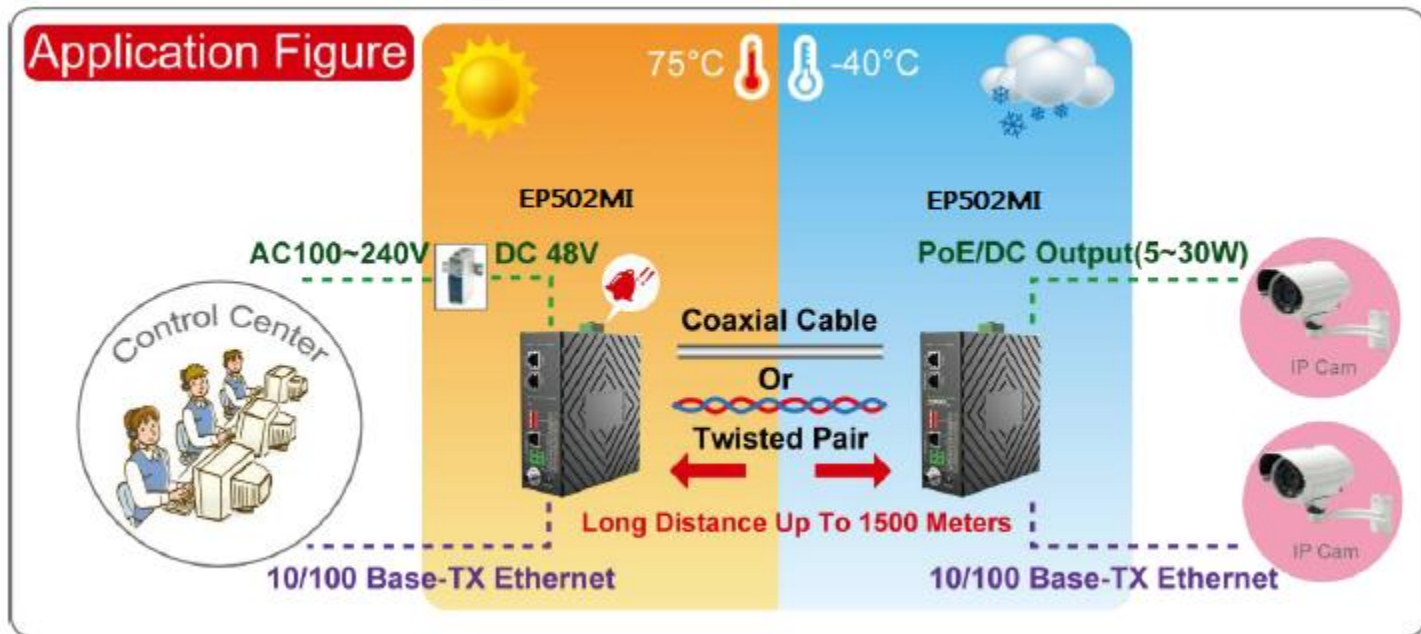
- ◆ EC600: 600 meter over RG6 with 50Mbps throughput



Industrial Mgt LRE+PoE over 2wire/Coax

※ EP502MI (P2P)

- Management function through Web GUI configuration
- 500 meter over 2 wire or 1.5km over Coaxial Cable
- PoE 30w output (or DC)
- Operation temperature: -40~75°C



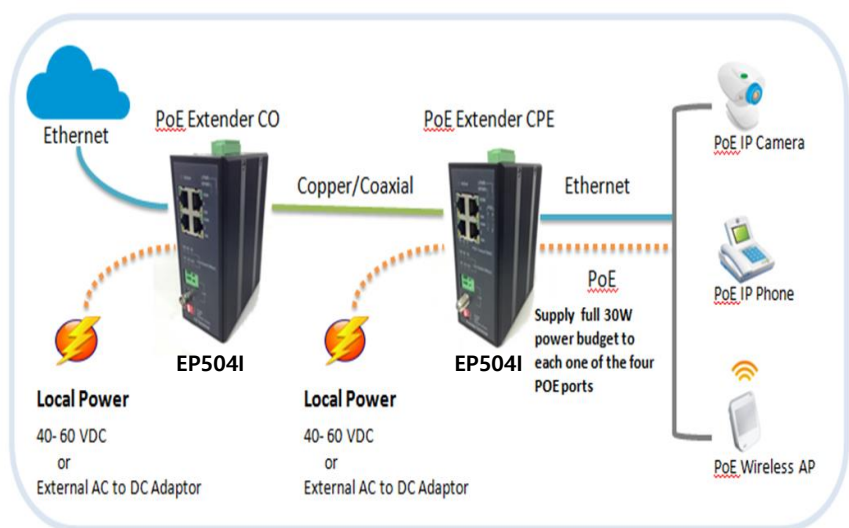
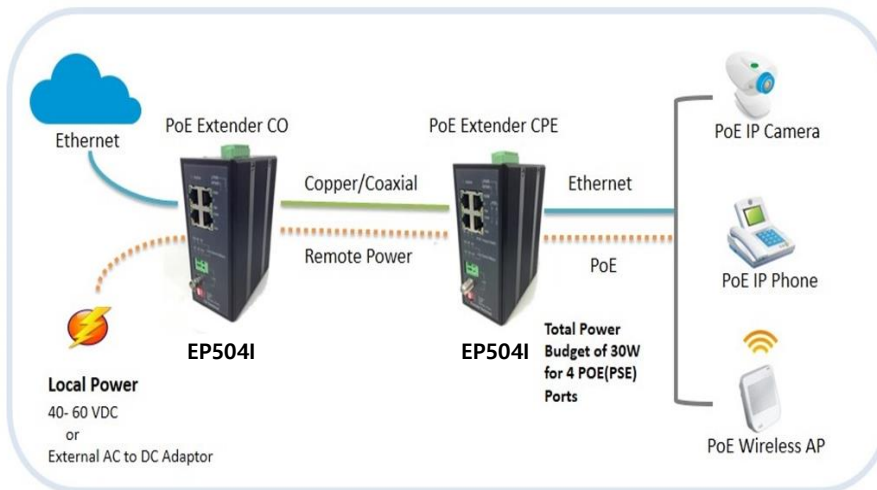
Industrial Grade LRE+PoE over 2wire/Coax

※ EP504I (P2P)

- 600 meter over 2 wire
- 1km over Coaxial Cable
- PoE 30w output
- Operation temperature:
-40~75 °C



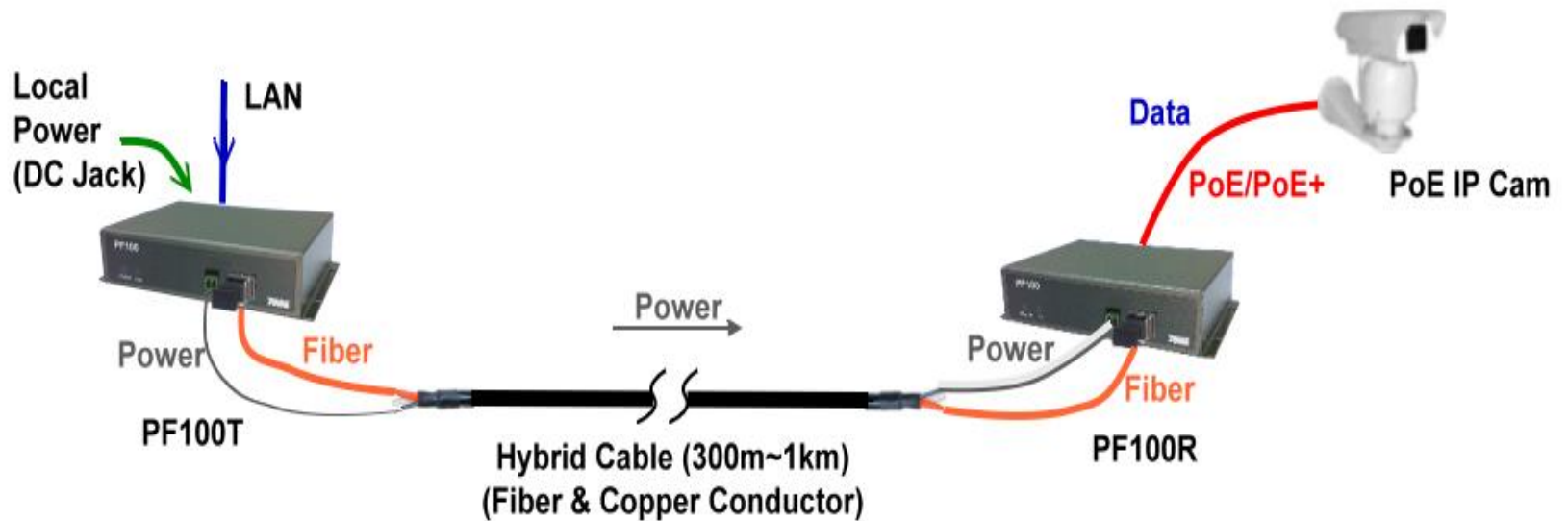
V278 for 8-port Mux



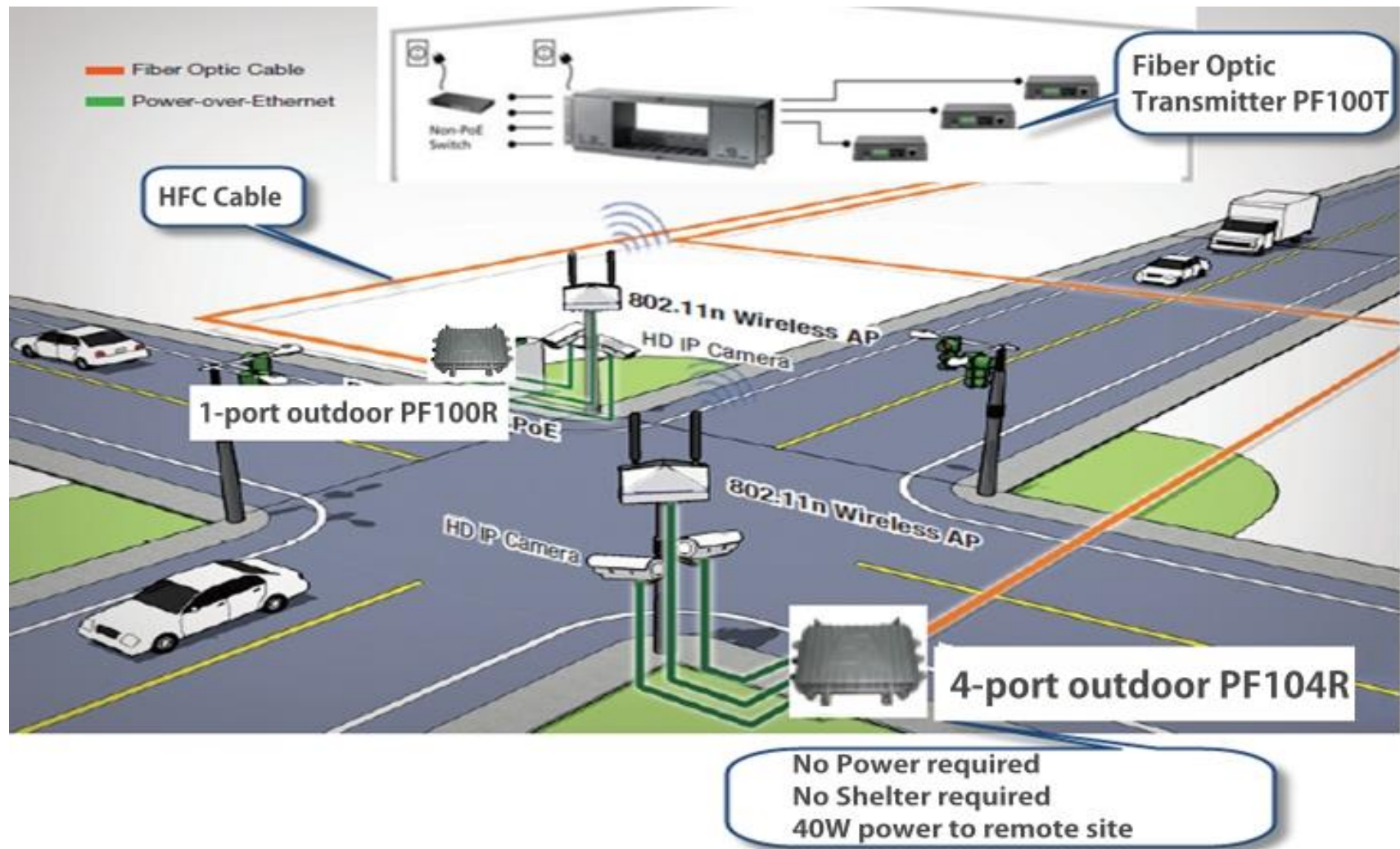
Fiber/Power Extender 1~2KM

◆ FE 10/100M

❖ PF100, PF104 (4p PoE out, 65w)



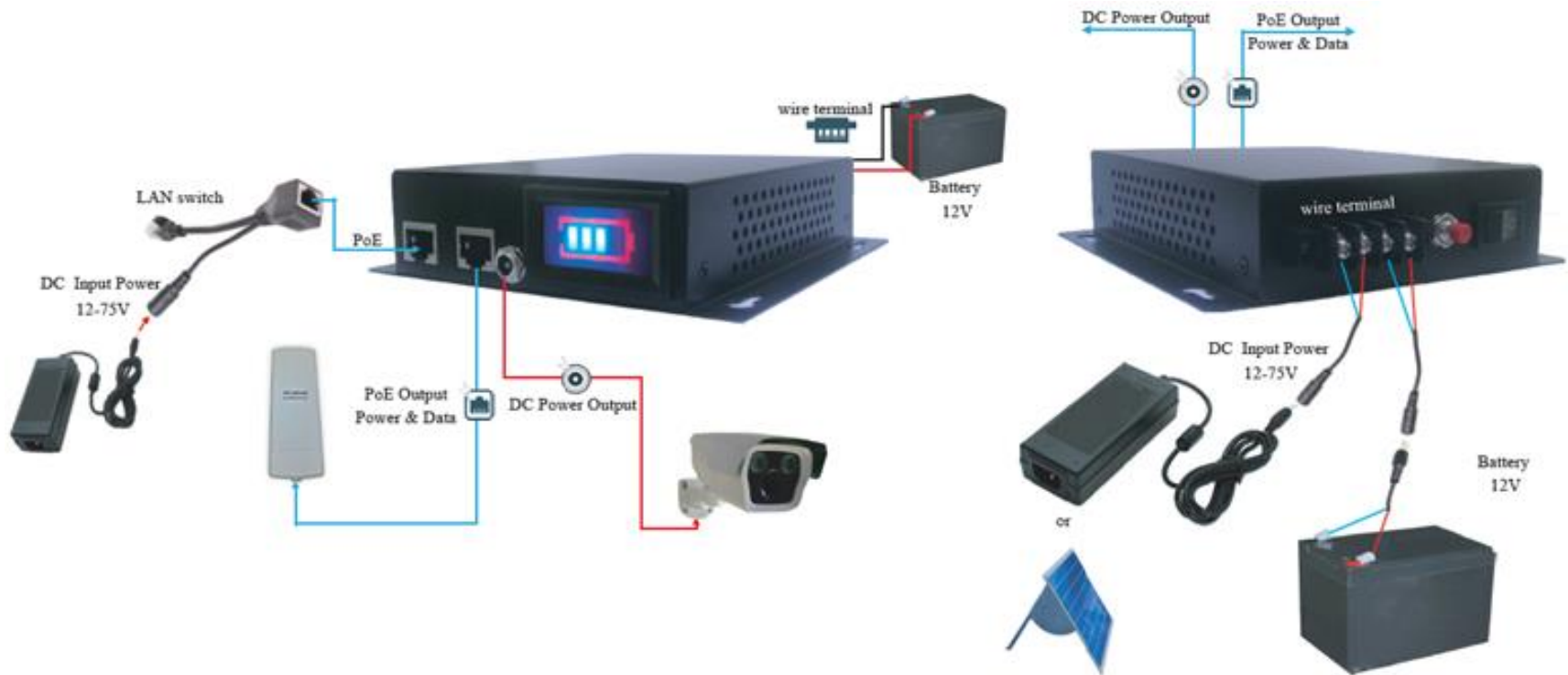
Fiber/Power Extender 1~2KM



Solar-powered + Battery backup PoE

◆ Power Input via PoE

- ❖ BP202: 24V/5A passive PoE
- ❖ BP303: 48V/0.5A IEEE 802.3at



Surge Protector

- ◆ 8KA over all pins (Data & PoE)



- ◆ 2KA over all pins (Data & PoE)

