DESCRIPTION

PD (Powered Device) Integrated Module (Isolation Type)

FEATURES

- Fully supports IEEE802.3af/at/bt
- Small Single In-Line (SIL) package size –62mm (L) x **27mm** (H)
- Input Voltage Range 44V to 57V
- Support PoE applications in both of Fast / Gigabit Ethernet environments.
- Short Circuit Protection
- Over-temperature Protection
- Programmable Classification (Default:Class 8)
- High Efficiency
- Isolation level 1.5KVrms.
- Easy Installation and Low Cost (Isolation Type, Minimum External Devices required)
- Low Output Ripple and Noise
- Adjustable Output Voltage
- 1500Vrms Isolation (Input-Output)
- **DP1205BT-S is Straight needle,DP1205BT is Curved needle**

APPLICATION AREAS

- Security and alarm systems
- Voice over IP phones
- Access control systems
- IP Cameras
- Displays, Net Monitors
- Public address systems
- Wireless access points
- Environmental control
- Telemetry
- Remote environmental monitoring

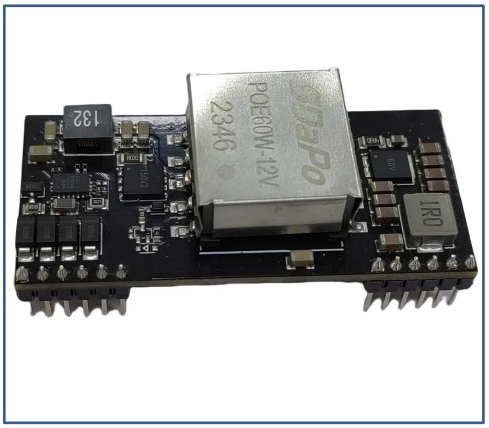
1 Product Overview

1.1 DP1205 Product Selector

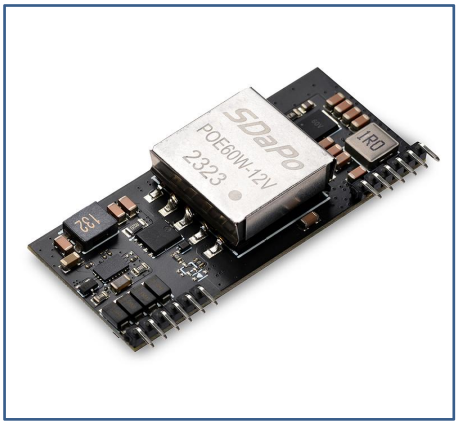
Part Number	Nominal Output Voltage	Maximum Output Power *
DP1205BT-12V	12.0V	60 Watts Peak 50 Watts Continuous
DP1205BT-24V	24.0V	60 Watts Peak 50 Watts Continuous

*At 25°C with V_{IN} = 52V

Table 1: Ordering Information



DP1205BT-S



DP1205BT

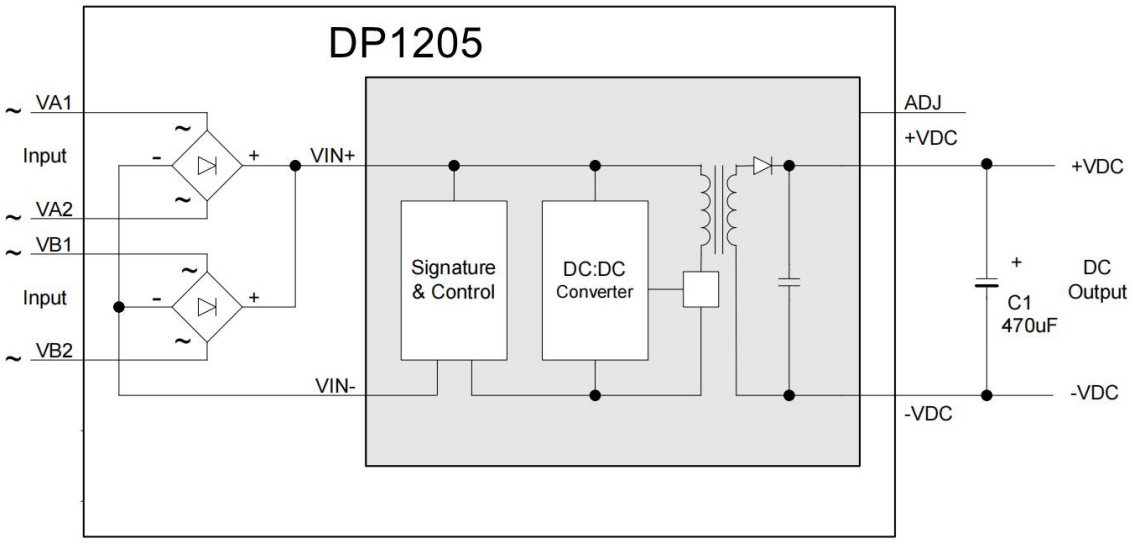


Figure 1: Block Diagram

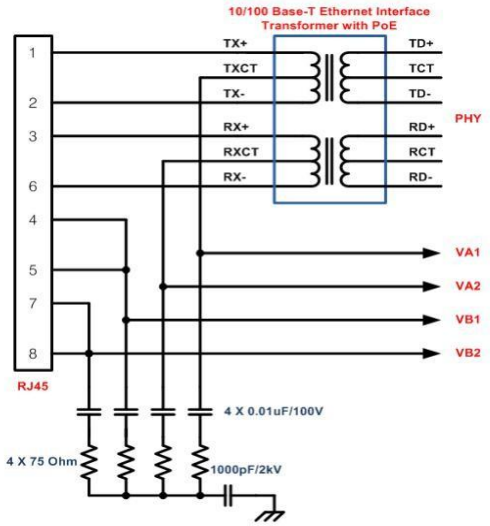
1.2 Pin Description

1	VA1	**RX Input (1)**. This input pin is used in conjunction with VA2 and connects to the centre tap of the transformer connected to pins 1 & 2 of the RJ45 connector (RX) - it is not polarity sensitive.
2	VA2	**TX Input (2)**. This input pin is used in conjunction with VA1 and connects to the centre tap of the transformer connected to pins 3 & 6 of the RJ45 connector (TX) - it is not polarity sensitive.
3	VB1	**Direct Input (1)**. This input pin is used in conjunction with VB2 and connects to pin 4 & 5 of the RJ45 connector - it is not polarity sensitive.
4	VB2	**Direct Input (2)**. This input pin is used in conjunction with VB1 and connects to pin 7 & 8 of the RJ45 connector - it is not polarity sensitive.
5,6	NC	**No Connection**
7,8	-VDC	**DC Return.** This pin is the return path for the +VDC output.
9.10	+VDC	**DC Output.** This pin provides the regulated output from the DC/DC converter.
11	ADJ	**Output Adjust**. The output voltage can be adjusted from is nominal value, by connecting an external resistor from this pin to either the +VDC pin or the - VDC pin
12	NC	**No Connection**

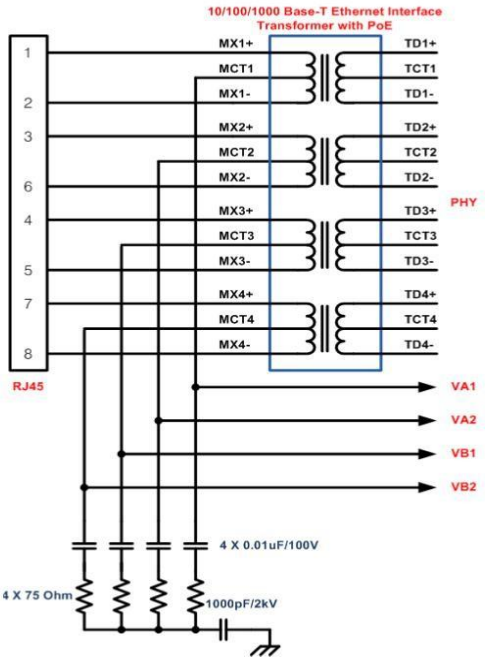
2 Functional Description

2.1 Typical Connections

10/100 Base-T APPLICATION



10/100/1000 Base-T APPLICATION



2.2 Output Voltage Adjustment

The DP1205BT series has an ADJ pin, which allows the output voltage to be increased or decreased.
Figure 3 shows how the ADJ pin is connected.

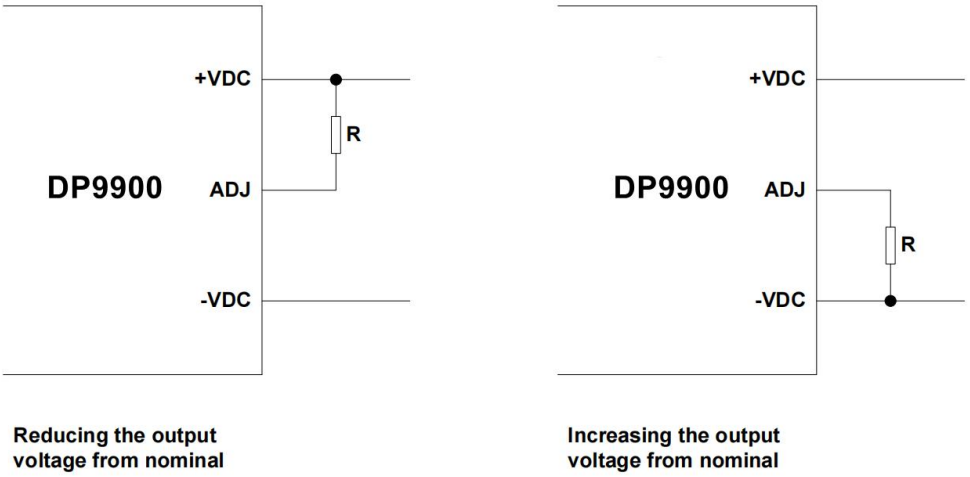


Figure 3: Output Adjustment

Reducing the output voltage, connect R between ADJ and +VDC		
Value of R	**DP1205BT 12V Output**	**DP1205BT 24V Output**
Open Circuit	12.07V	23.93V
470k	11.72V	23.14V
200k	11.28V	22.16V
100K	10.61V	20.66V
Increasing the output voltage, connect R between ADJ and -VDC		
Value of R	**DP1205BT 12V Output**	**DP1205BT 24V Output**
Open Circuit	12.07V	23.93V
470k	12.17V	24.02V
100K	12.52V	24.38V
51K	12.96V	24.81V

Table 3: Output Adjustment Resistor (R) Value

3 Electrical Characteristics

3.1Absolute Maximum Ratings

	Parameter	Symbol	Min	Max	Units
1	DC Supply Voltage	V_{CC}	-0.3	60	V
2	DC Supply Voltage Surge for 1ms	V_{SURGE}	-0.6	80	V
3	Storage Temperature	T_S	-40	+100	˚C

3.2 Recommended Operating Conditions

	Parameter	Min	Typ	Max	Units
1	Input Supply Voltage	36	52	57	V
2	Under Voltage Lockout	30		36	V
3	Operating Temperature	-40	25	85	℃
4	IEEE 802.3bt	Class 8			

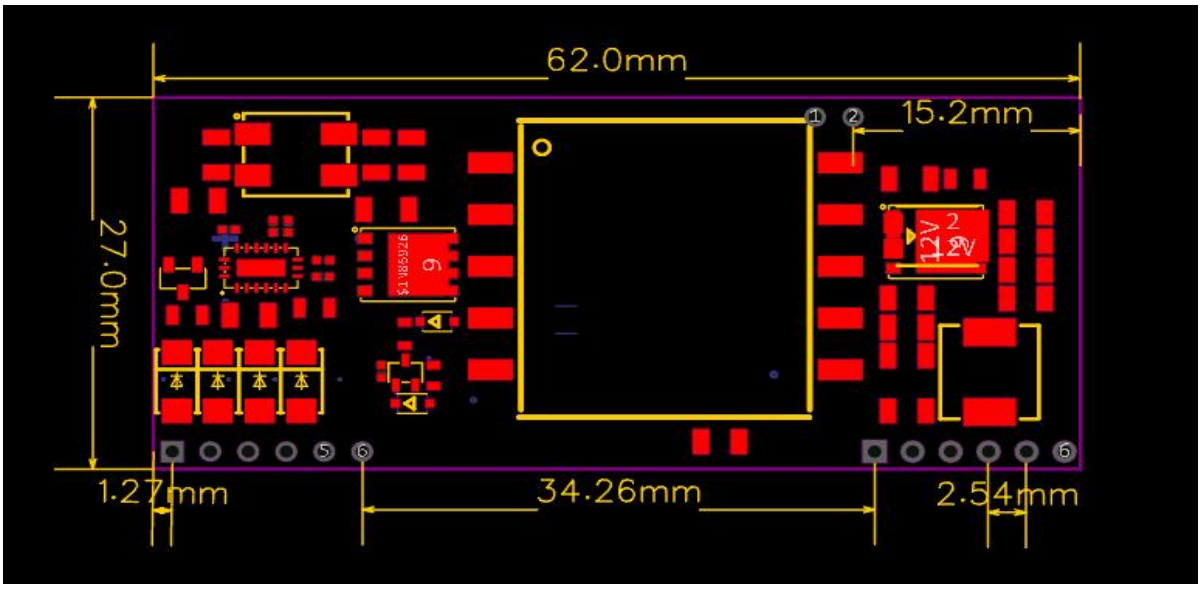
3.3 DC Electrical Characteristics

	DC Characteristic	Variant	Sym	Min	Typ[1]	Max	Units
1	Nominal Output Voltage	DP1205BT-12V		11.6	12	12.4	V
		DP1205BT-24V		23.2	23.9	24.5	
2	Minimum Load[2]	DP1205BT-12V		20			mA
		DP1205BT-24V		10			
3	Output Current (VIN = 52V)	DP1205BT-12V			5		A
		DP1205BT-24V			2.5		
4	Line Regulation	DP1205BT			0.05		%
5	Load Regulation – Min to Max (VIN = 52V)	DP1205BT			0.1		%
6	Output Ripple and Noise5@ Max load	DP1205BT-12V			80	@4A	mV_{p-p}
		DP1205BT-24V			100	@2.5A	
7	Peak Efficiency	DP1205BT-12V			92	@4A	%
		DP1205BT-24V			92	@2.5A	
8	Short-Circuit Duration[3]		T_{SC}			∞	sec
9	Isolation Voltage (I/O) - Impulse Test		V_{ISO}			1500	V_{PK}

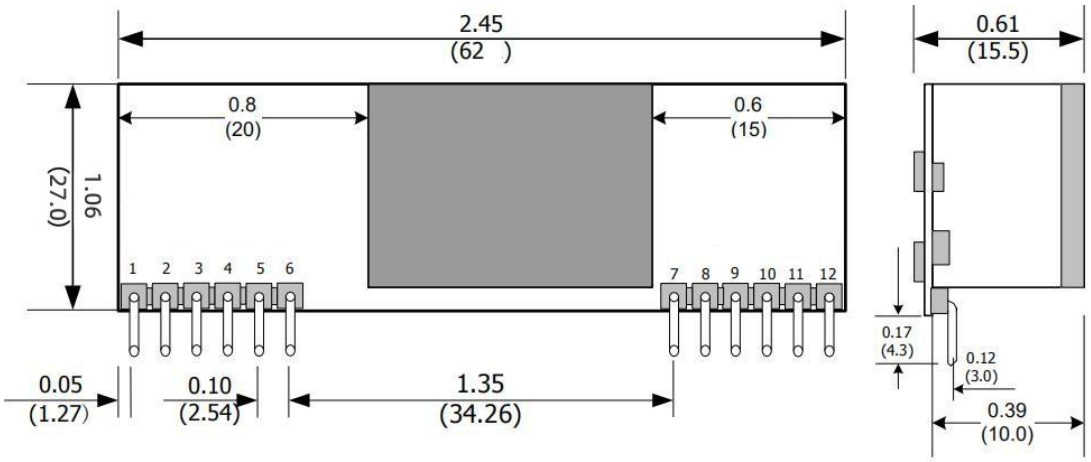
Note 1: Typical figures are at 25°C with a nominal 52V supply and are for design aid only. Not Guaranteed
Note 2: The module can emit an audible noise, if operated at less than the stated minimum I_{LOAD} and cause the PSE to fail its MPS.
Note 3: >200mohm short due to thermal limitation.
Note 4 : The output ripple and noise can be reduced with an external filter

4 Package

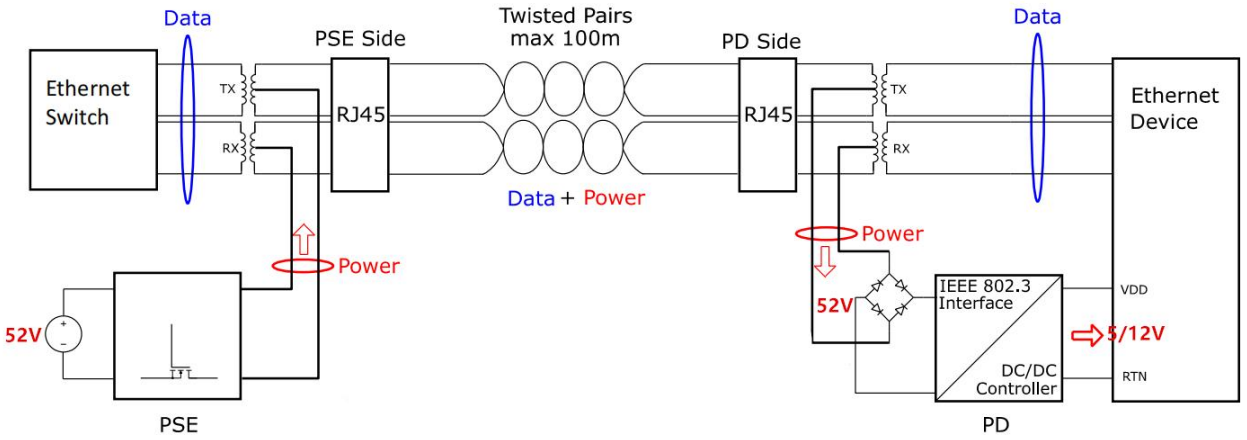
DP1205BT-S （Straight needle）



DP1205BT （Curved needle）

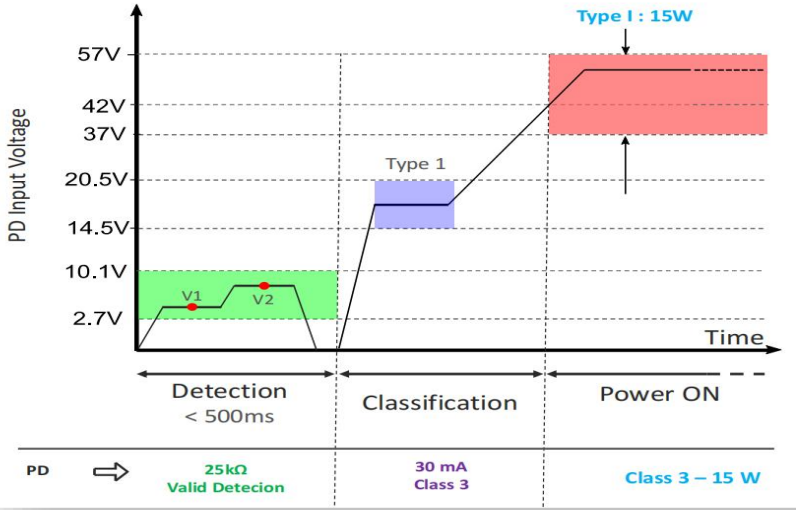


1. Power Delivery in PoE Systems

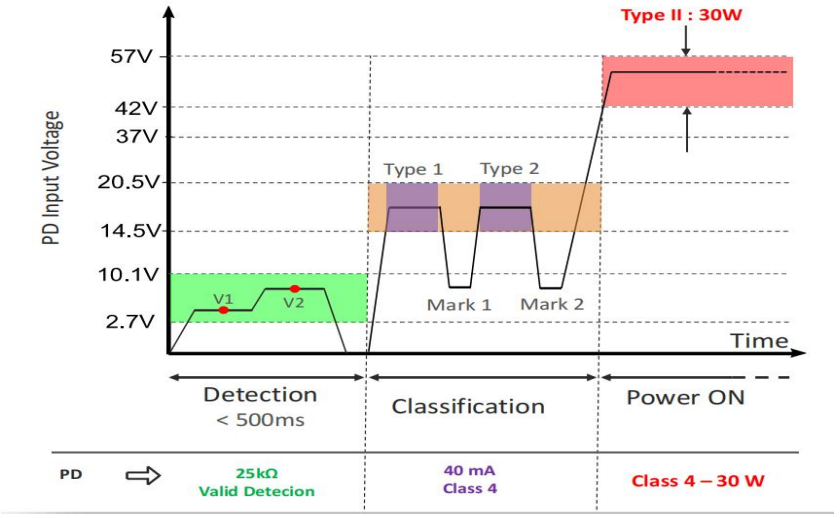


	Type 1 802.3af			Type 2 802.3at	Type 3 802.3bt		Type 4 802.3bt	
Power Class	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8
Power from PSE	4 W	7 W	15.4 W	30 W	45 W	60 W	75 W	90 W
Power delivered to PD	3.84 W	6.49 W	13 W	25.5 W	40 W	51 W	62 W	71.3 W

2. Establishing PoE Connection – Type 1 (IEEE 802.3af/PoE)



3. Establishing PoE Connection – Type 2 (IEEE 802.3at/PoE+)



4. Establishing PoE Connection – Type 3 and 4 (IEEE 802.3bt)

