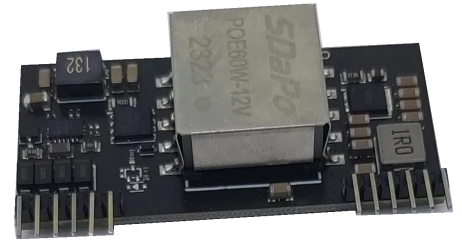


## DESCRIPTION

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)

## 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

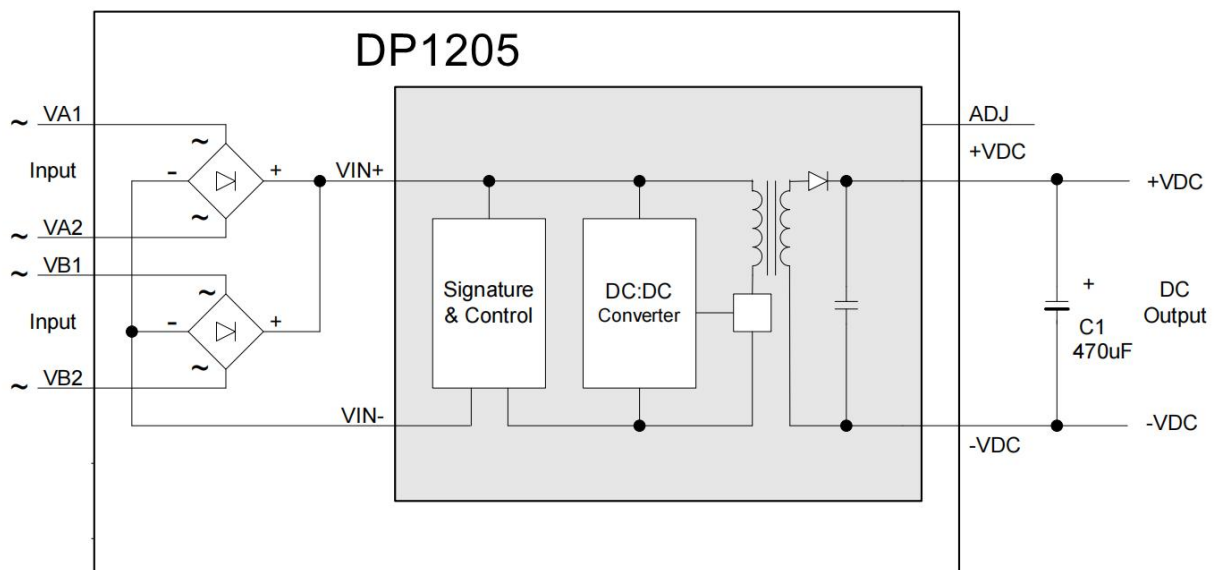
# 1 Product Overview

## 1.1 DP1205 Product Selector

Part Number	Nominal Output Voltage	Maximum Output Power *
DP1205BT V4-12V5A	12.0V	60 Watts Peak 50 Watts Continuous
DP1205BT V4-24V 2.5A	24.0V	60 Watts Peak 50 Watts Continuous

\*At 25°C with  $V_{IN} = 52V$

**Table 1: Ordering Information**



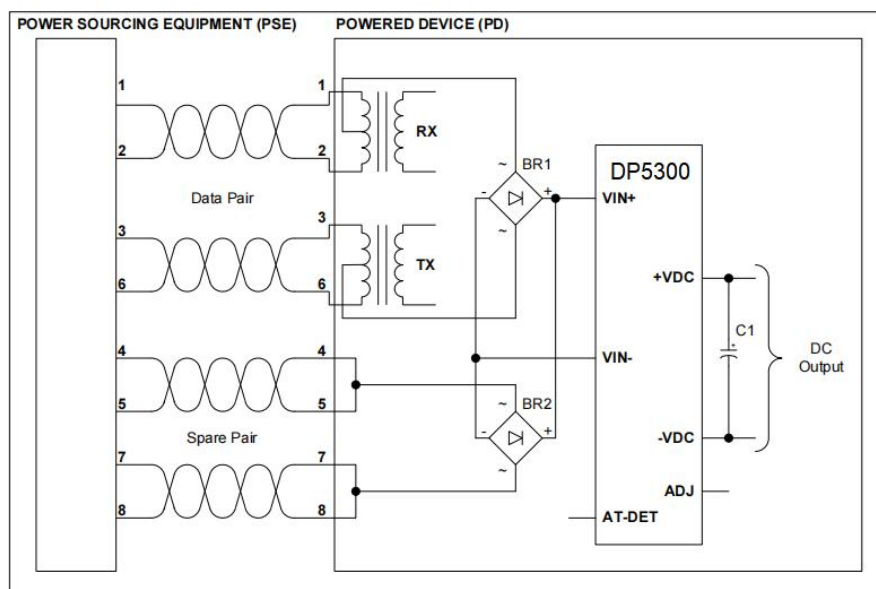
**Figure 1: Block Diagram**

## 1.2 Pin Description

1	VA1	<b>RX Input (1).</b> 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	<b>TX Input (2).</b> 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	<b>Direct Input (1).</b> 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	<b>Direct Input (2).</b> 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	<b>No Connection</b>
7,8	-VDC	<b>DC Return.</b> This pin is the return path for the +VDC output.
9,10	+VDC	<b>DC Output.</b> This pin provides the regulated output from the DC/DC converter.
11	ADJ	<b>Output Adjust.</b> The output voltage can be adjusted from its nominal value, by connecting an external resistor from this pin to either the +VDC pin or the -VDC pin
12	NC	<b>No Connection</b>

## 2 Functional Description

### 2.1 Typical Connections



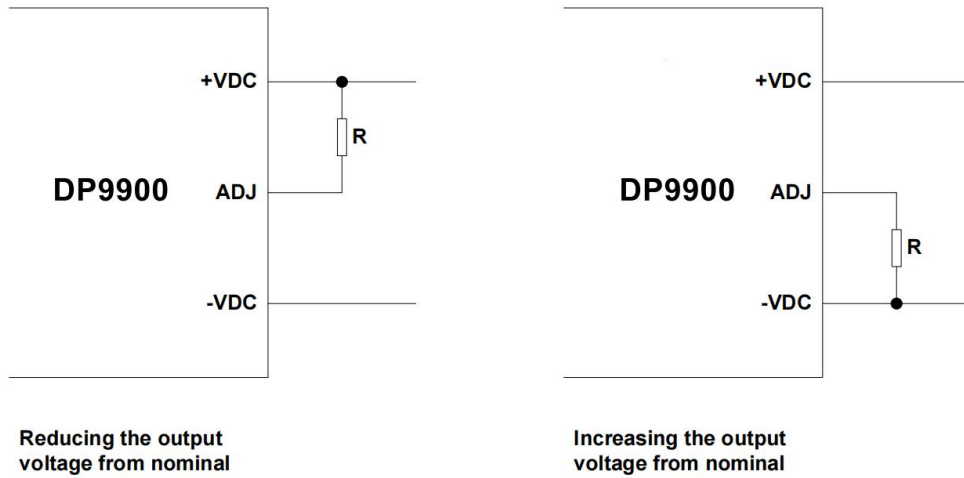
**Figure 2: Typical System Diagram**

\*Note: Suitable bridge rectifier for BR1 & BR2 would be a "MB210S" or equivalent.

### 2.2 Output Voltage Adjustment

The DP1205 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	DP1205 Output	DP1205-24V Output
Open Circuit	12.07V	23.93V
0 Ohms	10.0V	19.85V
100K	11.15V	21.85V
470k	11.76V	23.23V
Increasing the output voltage, connect R between ADJ and -VDC		
Value of R	DP1205 Output	DP1205-24V Output
Open Circuit	12.07V	23.93V
0 Ohms	12.75V	24.6V
100K	12.34V	24.2V
470k	12.16V	24.01V

**Table 3: Output Adjustment Resistor (R) Value**

### 3 Electrical Characteristics

#### 3.1 Absolute 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	°C
4	IEEE 802.3bt	Class 8			

### 3.3 DC Electrical Characteristics

	DC Characteristic	Variant	Sym	Min	Typ <sup>1</sup>	Max	Units
1	Nominal Output Voltage	DP1205		11.6	12	12.4	V
2	<b>Minimum Load<sup>2</sup></b>	DP1205		20			mA
3	Output Current ( $V_{IN} = 52V$ )	DP1205			5		A
4	Line Regulation	DP1205			0.05		%
5	Load Regulation – Min to Max ( $V_{IN} = 52V$ )	DP1205			0.1		%
6	Output Ripple and Noises <sub>5@</sub> <sup>Max load</sup>	DP1205			80	@4A	mV <sub>p-p</sub>
7	Peak Efficiency	DP1205			92	@4A	%
8	Short-Circuit Duration <sup>3</sup>		$T_{SC}$			$\infty$	sec
9	Isolation Voltage (I/O) - Impulse Test		$V_{ISO}$			1500	V <sub>PK</sub>

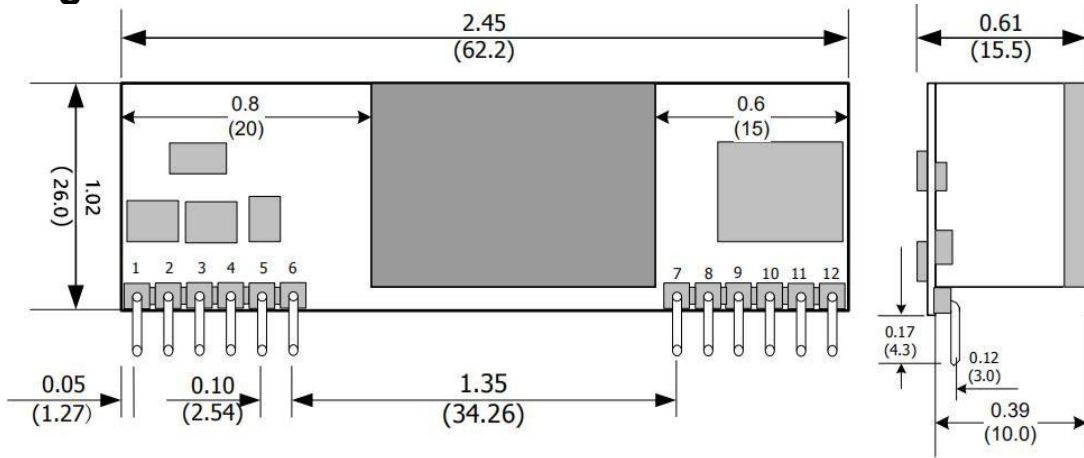
Note 1: Typical figures are at 25°C with a nominal 52V supply and are for design aid only. Not Guaranteed

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.

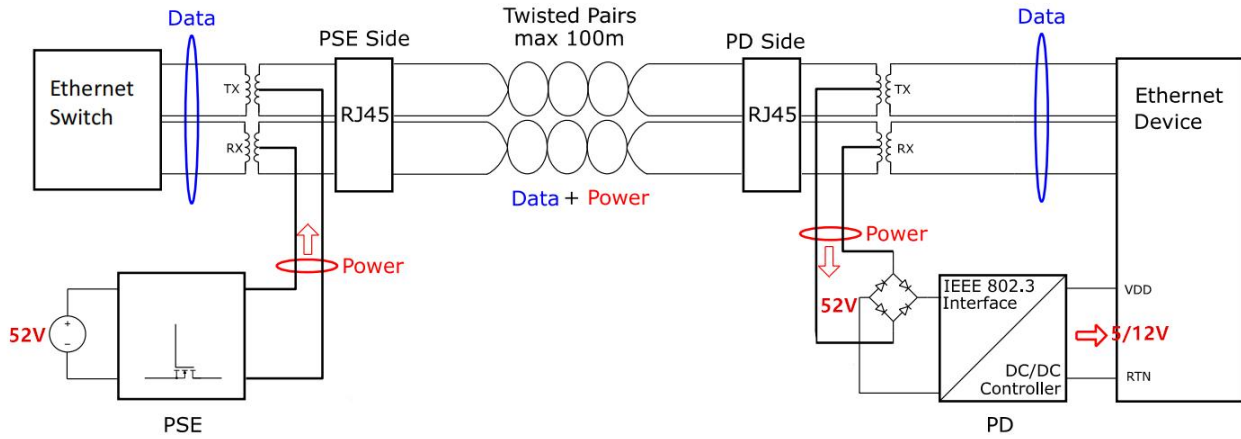
Note 3: >200mohm short due to thermal limitation.

Note 4: The output ripple and noise can be reduced with an external filter

**4 Package**

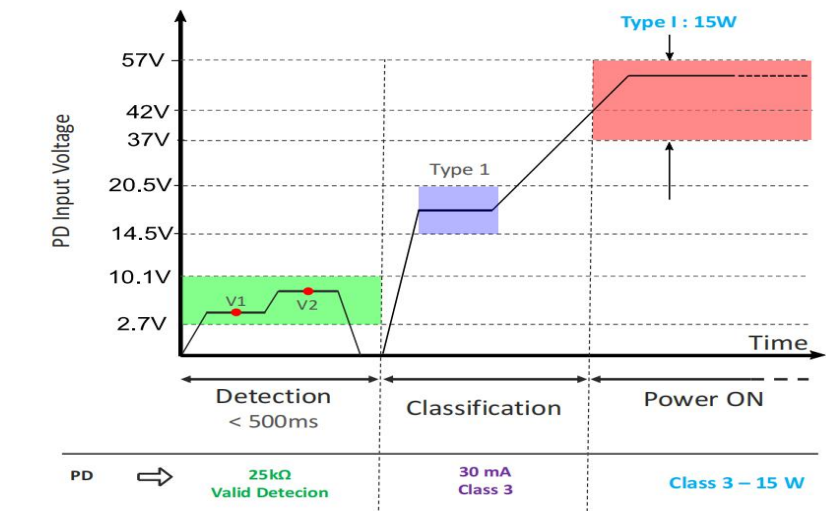


### 1. Power Delivery in PoE Systems

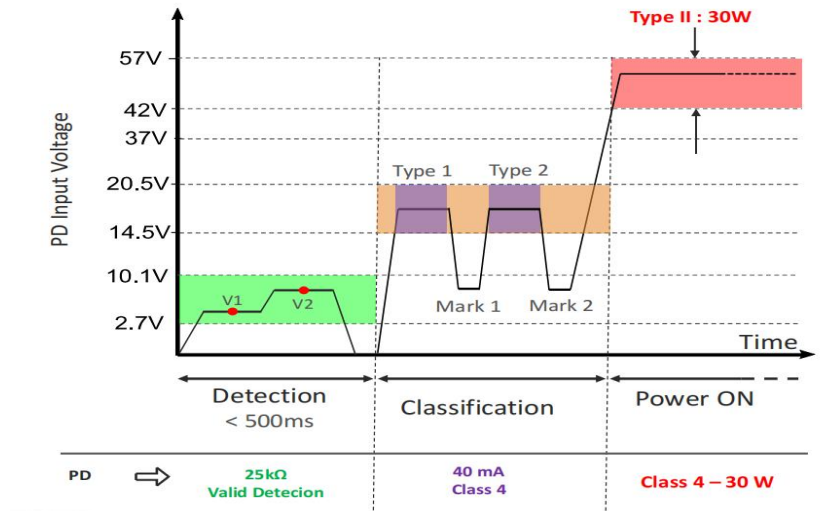


	Type 1 802.3af			Type 2 802.3at	Type 3 802.3bt		Type 4 802.3bt	
Power Class	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8
Power from PSE	4 W	7 W	15.4 W	30 W	45 W	60 W	75 W	90 W
Power delivered to PD	3.84 W	6.49 W	13 W	25.5 W	40 W	51 W	62 W	71.3 W

### 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)

