



SM-UART-01L+

Laser Dust Sensor

PM2.5



Telaire SM-UART-01L+ Laser Dust Sensor detects dust particle concentration in air by using an optical sensing method. A laser light emitting diode (laser LED) and a photosensor are optically arranged in the device. The photosensor detects the reflected laser LED light by dust particles in air, including particle sizes below PM2.5. The dust sensor can detect small particles, such as cigarette smoke, and distinguish small particles, such as smoke from large house dust, by the pulse pattern of the signal output.

Applications

- Detection of dust in the air for Indoor Air Quality Monitoring
- Air cleaners and air purifiers
- Air conditioners and HVAC
- Outdoor dust monitoring

Features

- Fast response $\leq 15s$
- High accuracy $\leq \pm 15\%$
- Digital UART output
- Ultra-compact (43mm L x 45mm W x 18mm H)



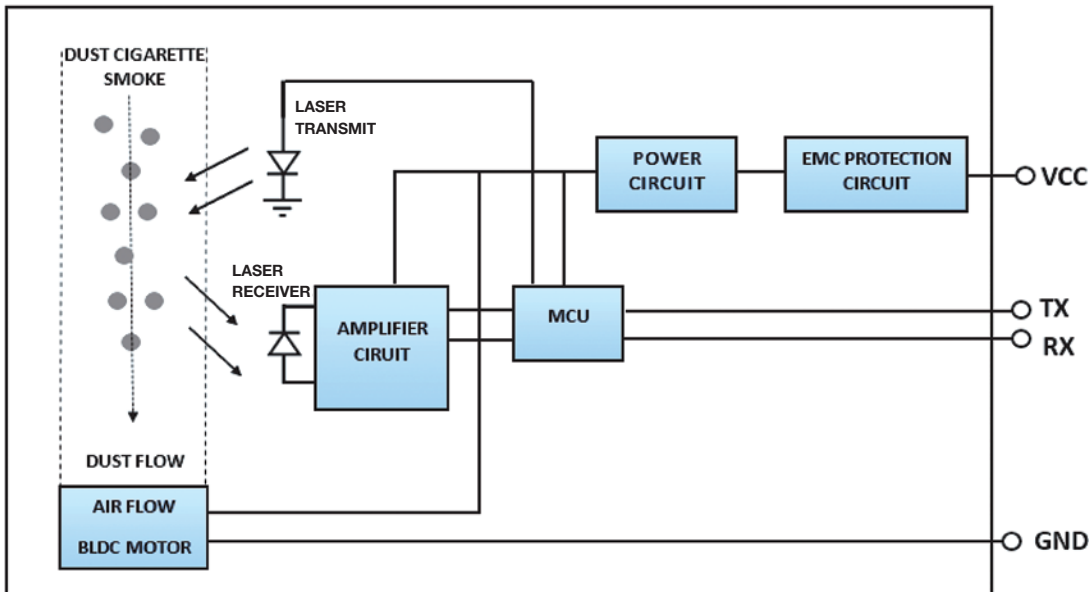
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SM-UART-01L+ Dust Sensors

Electrical Parameters

Absolute Maximum Ratings			
Parameter	Symbol	Rating	Unit
Supply Voltage	V_{CC}	4.8 ~ 5.2	V
Operating Temperature	T_{opr}	-10 ~ 50	°C
Storage Temperature	T_{stg}	-20 ~ 70	°C
Operating Humidity ^[1]	RH_{opr}	35 ~ 85	%
Storage Humidity ^[1]	RH_{stg}	35 ~ 85	%

Block Diagram



Electro-Optical Characteristics

Parameter	Symbol	Minimum	Typical	Maximum	Unit	
Particle Size	D	0.3	2.5	10	um	
Detection Range	D_{reg}	1	-	999	ug/m ³	
Resolution	R	-	1	-	ug/m ³	
Detection Error ^[2]	0 ~ 100ug/m ³	D_{err}	-	-	+/-15	ug/m ³
	> 100ug/m ³		-	-	+/-15	%
Response Time	t_{rsp}	-	10	-	s	
Supply Voltage	V_{CC}	-	5 Ripple<30mV	-	V	
Current Consumption	I_{CC}	-	-	100	mA	
Signal Output (RX, TX)	L<0.8 @ 3.3V, H>2.7 @ 3.3V					

[1] Non-Condensing

[2] Testing at T=25°C, RH=40-60%

SM-UART-01L+ Electrical Characteristics

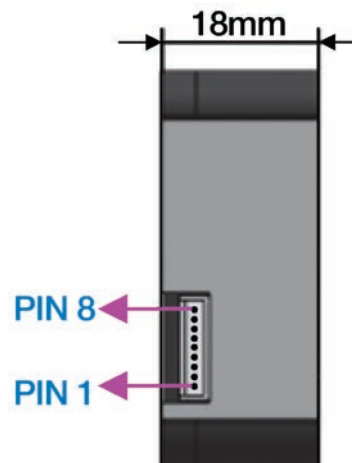
Connector

Name	Part No.	Description	Manufacturer
Connector	A1251WR-8P	1.25mm pitch	CJT
Housing	A1251H-8P		
Terminal	A1251-TP		

Alternative Connectors

Part No.	Maker
440146-8	TE
10114826-00008LF	Amphenol FCI

PIN MAP		
PIN1	NC	Not connected
PIN2	NC	Not connected
PIN3	NC	Not connected
PIN4	TXD	UART Transceiver @ 3.3V TTL
PIN5	RXD	UART Receiver @ 3.3V TTL
PIN6	NC	Not connected
PIN7	GND	Ground
PIN8	VCC	Input supply voltage



PIN1	NC
PIN2	NC
PIN3	NC
PIN4	TXD
PIN5	RXD
PIN6	NC
PIN7	GND
PIN8	VCC

Communication Protocol

UART Serial Configuration	
Baud rate	9600 bps
Data bits	8
Parity	None
Stop bits	1

See Application Guide for full detail of protocol. (Document ID: AAS-916-136A)

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