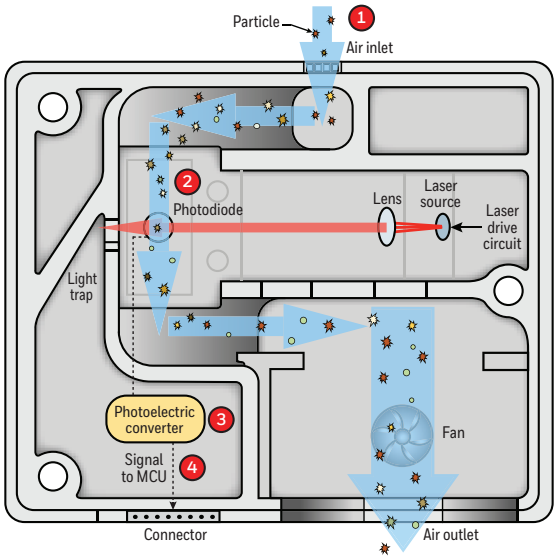
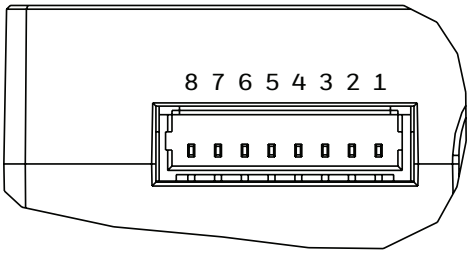
Figure 1. HPM Series Operation (standard version shown top down)



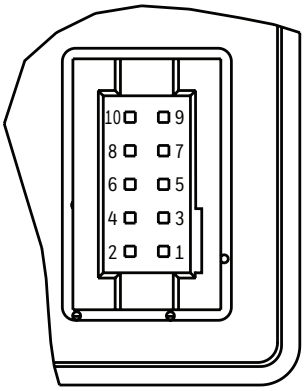
1. Fan draws in air through inlet.
2. Air passes through the laser where the light reflected off the particles is captured by the photodiode.
3. The photodiode passes information to the photoelectric converter
   The photoelectric converter processes the signal from the particles into density.
4. Signal is transmitted to micro control unit where a proprietary algorithm processes the data and supplies outputs for the density of the particulate ($\mu g/m^3$).

Table 3. Standard and Compact Connector Pinout

Standard



Compact



Pin	Name	Description	Pin	Name	Description
1	V_{OUT}	power output (+3.3 V/100 mA)	**1**	V_{OUT}	power output (+5 V) (output max.: 300 mA)
2	V_{CC}	power input (5 V)	**2**	V_{CC}	power input (+5 V)
3	N/A	N/A	**3**	GND	ground
4	N/A	N/A	**4**	GND	ground
5	RES	reserved for future use	**5**	RES	reserved for future use
6	TX	UART TX output (0 V - 3.3 V)	**6**	N/A	N/A
7	RX	UART RX input (0 V - 3.3 V)	**7**	RX	UART RX input (0 V - 3.3 V)
8	GND	ground	**8**	N/A	N/A
-	—	—	**9**	TX	UART TX output (0 V - 3.3 V)
-	—	—	**10**	SET	reserved for future use

Table 4. Standard Version Customer Use Protocol[1]

Command Length (Bytes)	HEAD	LEN	CMD	Data	CS	Example
Read Particle Measuring Results						
Send	0x68	0x01	0x04	NA	CS = MOD ((65536-(HEAD+LEN+CMD+DATA)), 256)	68 01 04 93
Response, Pos ACK	0x40	0x05	0X04	"DF1, DF2, DF3, DF4 PM2.5 = DF1 * 256 + DF2 PM10 = DF3 * 256 + DF4"	CS = MOD ((65536-(HEAD+LEN+CMD+DATA)), 256)	40 05 04 00 30 00 31 56
Response, Neg ACK	0X9696					
Start Particle Measurement						
Send	0x68	0x01	0x01	NA	CS = MOD ((65536-(HEAD+LEN+CMD+DATA)), 256)	68 01 01 96
Response, Pos ACK	0xA5A5					
Response, Neg ACK	0x9696					
Stop Particle Measurement[2]						
Send	0x68	0x01	0x02	NA	CS = MOD ((65536-(HEAD+LEN+CMD+DATA)), 256)	68 01 02 95
Response, Pos ACK	0xA5A5					
Response, Neg ACK	0x9696					
Set Customer Adjustment Coefficient						
Send	0x68	0x02	0x08	DF1: 30 ~ 200 (Default, 100)	CS = MOD ((65536-(HEAD+LEN+CMD+DATA)), 256)	68 02 08 64 2A
Response, Pos ACK	0xA5A5					
Response, Neg ACK	0x9696					
Read Customer Adjustment Coefficient						
Send	0x68	0x01	0x10	NA	CS = MOD ((65536-(HEAD+LEN+CMD+DATA)), 256)	68 01 10 87
Response, Pos ACK	0X40	0X02	0X10	DF1: 30 ~ 200 (Default, 100)	CS = MOD ((65536-(HEAD+LEN+CMD+DATA)), 256)	40 02 10 64 4A
Response, Neg ACK	0x9696					
Stop Auto Send						
Send	0x68	0x01	0x20	NA	CS = MOD ((65536-(HEAD+LEN+CMD+DATA)), 256)	68 01 20 77
Response, Pos ACK	0xA5A5					
Response, Neg ACK	0x9696					
Enable Auto Send[3]						
Send	0x68	0x01	0x40	NA	CS = MOD ((65536-(HEAD+LEN+CMD+DATA)), 256)	68 01 40 57
Response, Pos ACK	0xA5A5					
Response, Neg ACK	0x9696					

[1]Product life may vary depending on the specific application in which the sensor is utilized.

[2]Shuts down the fan, helping to extend the life of the product.

[3]See Table 6 for data format.