



# ParticleSense

## Online Particle Counter

The ParticleSense performance reliability, ease of use, and measurement capability make it an ideal choice for online filter performance monitoring and optimisation. This is most clearly demonstrated in the ParticleSense's ability to detect filter breakthrough often hours in advance of any NTU change.

- **Water Treatment**
- **Reverse Osmosis Treatment**
- **Wastewater Treatment**
- **Parts Washing**
- **Reverse Osmosis Pretreatment**
- **Food & Beverage**
- **Membrane Filtration**
- **Pharmaceutical**

Close to two decades of customer experience with ParticleSense has proven the effectiveness of this technology to take water quality monitoring to the next level. ParticleSense is the right choice if the optimisation demands of your application are not being met by relative and less sensitive measurements of water quality like those provided by a turbidity meter or SDI test systems.

### Standard Features

- **Counts particles in liquid from 2-750 microns**
- **Sizes particles from 2-125 microns**
- **Up to 8 user programmable size ranges**
- **Large display with 8 channel readout & graph**
- **Reports total counts, cnts/ml, or cnts/100ml**
- **User friendly, menu driven calibration**
- **Modbus RTU communication**
- **Laser & cell condition readout (0-100%)**
- **External sensor with sapphire optics**



### Benefits

- **Provides a reliable and accurate measurement of particles down to low ppt levels**
- **Advanced firmware and menu functions eliminates the need for external software to perform setup and calibration**
- **User friendly operator calibration routine makes calibration fast, simple, and lowers maintenance cost**
- **Large display shows all 8 particle size channels at once, plus graph of last 64 readings and other sensor performance info**
- **External sensor is easy to clean and water is kept away from electronics**



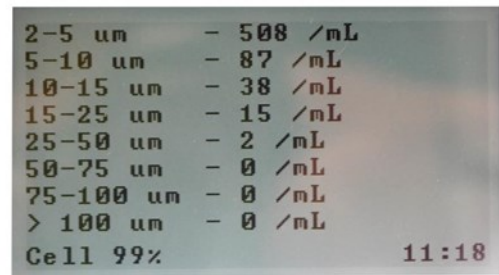
## Principle of Operation

ParticleSense is designed to "count" particles in a liquid sample from 2 to 750 micron in diameter and "size" particles ranging from 2 to 125 microns in diameter. Particles larger than 125 micron will be sized as >125 micron particles. Particles are divided into user adjustable size channels (or bins). The number of particles counted in each of these bins can be reported as counts per millilitre, counts per 100 millilitre, or Raw Counts.

The sensor consists of a flow cell with two transparent windows that sit directly between a 780nm infrared laser diode and a light detector. The laser's tightly focused beam of light is transmitted across the flow cell and onto the detector which converts light energy into electrical voltage. Sample flow passes through the flow cell, so that any particles in the sample will pass through the laser beam. This causes a small percentage of the light to be blocked from reaching the detector. The light blockage then appears as a change in the detector's output voltage. The amplitude of the pulse correlates to the size of the particle. The output of the sensor is a stream of pulses of varying amplitude, each corresponding to a particle. This type of device is known as a light blocking or light extinction particle counter.

Calibration of the ParticleSense using Polystyrene Latex (PSL) spheres is very user friendly and can be performed in just a few

minutes and ParticleSense does not need to be returned to the factory to be calibrated. Unlike most other particle counters, the ParticleSense does not require the use of an external computer or software package to setup or calibrate the instrument.



ParticleSense Display



ParticleSense Display

## Specification\*

<b>Laser Type:</b>	Solid-state laser diode (780nm)
<b>Cell Material:</b>	Nituff™ coated aluminium PEEK plastic (optional)
<b>Viewing Windows:</b>	Sapphire
<b>Detection Range:</b>	2-750 microns
<b>Sizing Range:</b>	2-125 microns
<b>Flow Rate:</b>	75ml/min
<b>Resolution:</b>	Better than 10% at 10 micron (ASTM-F658)
<b>Coincidence Limit:</b>	20,000cnts/ml (2 micron)
<b>Signal to Noise Ratio:</b>	Better than 5:1
<b>Size Channels:</b>	8 - user selectable and total counts
<b>Alarms:</b>	Sensor diagnostic, particle count limit
<b>Laser Diode Life:</b>	MTBF > 75,000 hours at 55°C
<b>Measurement Type:</b>	Light obscuration, volumetric, counts/ml
<b>Local Display:</b>	Graphical, 8 size channels displayed at once, unit info/diagnostic screen, alarm screen, total count screen, graphical trending, user menus
<b>Display Readout:</b>	Size channel, counts, cell condition (0-100%), laser condition (0-100%), unit address, sample period, sample frequency, flow rate, days until data log overwrite
<b>Graphical Trending:</b>	Trending of last 64 logged values for any size range, analog input, or sensor status %
<b>Data Storage:</b>	>60,000 sample strings User defined logging interval (1-254min)
<b>Keypad Interface:</b>	All instrument settings may be modified via the keypad interface, including instrument calibration (some settings require password)
<b>Serial Comms:</b>	2 wire RS485 (Network) and RS232 (Local)
<b>Comms Protocols:</b>	Standard: Modbus RTU (RS485) Optional: Modbus TCP (Ethernet)
<b>Analog Outputs:</b>	2, 4, 6, or 8 channels, 4-20mA (optional)
<b>Analog Inputs:</b>	2, 4, 6, or 8 channels, 0-5V, 0-10V, 0-20mA, 4-20mA (optional)
<b>Power Requirements:</b>	100-240 VAC, 1A, 47-63Hz 12 or 24 VDC optional
<b>Operating Temp:</b>	32°-120°F (0°-50°C)
<b>Dimensions:</b>	12" W x 11" H x 5" D (305mm W x 280mm H x 127mm D)
<b>Weight:</b>	7lbs (3.2kg)

\*All subject to change without notice