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Six-Channel Hybrid Handheld Particle Counter

HAL-HPC600

Features

- All 6 channels continuously adjustable with 0.1 micron step resolution
- Combines both handheld and portable functionalities with a built-in mini-printer
- USB and RJ45 interfaces for remote real-time sampling and data download
- Long-distance remote sensing via Ethernet
- Up to 6000 internal data memory
- Excess-count-limit warnings
- High precision, digital, external temperature and humidity sensors
- Durable keypads with a large blue LCD display

The HPC600 handheld laser particle counter is the latest innovation in the demanding application of particle distribution measurements. It is useful in measuring particle distributions in ultra-clean environments by its single particle counting ability as well as in indoor air quality applications. The instrument consists of a handheld monitor with a main base unit that allows users to conduct sampling with the portable handheld monitor while easily expanding to multiple functionalities provided by the base unit. These extended functions include real-time data remote sampling, printing, data downloading, software upgrades, battery charging, etc. In addition to USB interfaces, the RJ45 interface allows users to conduct remote sampling away from the sampling location via Ethernet/Internet.

The HAL-HPC600 is the world's first of its kind hybrid handheld optical particle counter. The instrument is truly a breakthrough for a new generation of particle counters that combine the traditional handheld instruments with functionalities of portable instruments. It is in compliance with the international standards (JIS B 9925:1997 and ISO14644-1) and CE certification. It supports both metric and English systems. All of its key components are made in the USA, Germany or Japan. It features high sensitivity, multiple functional capabilities, ease of use and reliability for extremely sensitive environmental measurements and advanced applications.

HAL TECHNOLOGY, LLC 7970 Cherry Avenue, Suite 303, Fontana, CA 92336, U.S.A.
Phone: (855) GET-HALTECH (toll free) info@haltechnologies.com http://www.haltechnologies.com

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Applications

- **Clean environment monitoring**
- **Indoor air quality**
- **Test/Check filter seal and efficiency**
- **Trace contamination source**
- **Analysis of particle size distribution**

Specifications

Light Source	Laser diode (>100,000 hours)
Sensitivity	0.3µm
Size Range	0.3 ~ 25µm
Channels	User configurable on any channel with 0.1µm resolution (six default channel settings: 0.3, 0.5, 0.7, 1.0, 2.0, 5.0µm)
Counting Efficiency	50±20% @ 0.3µm 100±10% @ 0.45µm
Coincidence Loss	<5% @ 70,000 particles/liter or <5% @ 2,000,000 particles/ft^3
Zero Count	<1 count per 5 minutes
Flow Rate	2.83 L /min (0.1cfm)
Sampling Time	User defined: (up to 59m59s) and auto repeat (up to 99 times)
Count Limit Warning	FED STD 209E (Class 1 ~ 100,000) or ISO 14644-1 (Class 2 ~ 9)
Sampling Mode	Cumulative, differential, concentration (counts/liter, counts/cubic foot)
Error Indicator	Excess count limit, optics contamination, loss of laser power, insufficient battery power
Interface	USB, RS232, RJ45
Internal Memory	6000 measurement data (1000 sets)
Power	Removable, rechargeable Lithium battery (7.4V/2800mAh) or 9VDC AC Adapter (100~240V input)
Max. Operating Time	Continuous operation > 5 hours with Lithium battery
Dimensions	Handheld: 185 (H) × 90 (W) ×48 (D) mm Base unit: 152 (Dia.)× 90 (H) mm
Weight	< 800 grams (including battery)
Environmental Conditions	Operating: 0 ~ 50℃, < 90%RH Storage: -20 ~ 65℃, < 90%RH
Accessories	Main base unit, AC adaptor, iso-kinetic probe, USB data cable, remote sampling and data download software (CD), zero-count/purge filter, digital temperature and humidity sensor probe, tripod, traceable calibration certificate

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Superthin 3-Channel Handheld Particle Counter

HPC301

Features

- **Simultaneously measures 3 user configurable particle sizes**
- **Counting modes with cumulative/differential/ concentration/average/ auto-repeat / timer**
- **Up to 3000-data (1000 sets) internal memory**
- **Excess-count-limit warning**
- **USB and Bluetooth interface for data downloading**
- **External digital temperature, humidity and pressure probe**

HAL-HPC301, replacing the popular but obsolete model HPC300, is a completely new designed, integrated with the state-of-art technology, handheld laser particle counter, The stylish design of HPC301 features easy-clean stainless enclosure particularly suitable in ultra clean environment. Because of its low-cost, versatility, and affordability, it can also be used for indoor/outdoor air quality (IAQ) application. The touch-screen display has adjustable color scheme and everything-at-a-glance user interface. The settings of measurement parameters as well as results displayed in **total counts**, **number concentration** or/and **mass concentration** as well as **PM values** *(new feature for IAQ application)* are all controlled and realized by an internal microprocessor (MCU). The HPC301 simultaneously measures three channel sizes that are configurable by a user. The data stored onboard can be downloaded through either a USB or Bluetooth wireless interface to a smart phone, a tablet or a computer.

The HAL-HPC301 is manufactured in the USA and is in compliance with the international standards (JIS B 9925:1997 and ISO21501 and ISO14644-1) and CE certified. It is very unique compared to any other manufacturers in the market. It features high sensitivity, multiple functional capabilities and extended battery operating time. It is compact, slim, and lightweight. The improved side-access ports and tripod mountable makes it very user friendly.

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Applications

- Clean environment monitoring
- Indoor air quality
- Test/Check filter seal and efficiency
- Trace contamination source
- Analysis of particle size distribution

Specifications

Light Source	Laser diode (>100,000 hours)
Sensitivity	0.3μm
Size Range	0.3μm~20μm
Channels	All three channels and size are user configurable
Counting Efficiency	50±20% @0.3μm 100±10% @0.45μm
Coincidence Loss	<5% @70,000 Particles/Liter or <5% @2,000,000 particles/ft^3
Zero Count	<1 count per 5 minutes
Flow Rate	2.83 L /min (0.1cfm)
Sampling Time	User defined: (up to 59m59s) and auto repeat (up to 99 times)
Count Limit Warning	FED STD 209E (Class 1 ~ 100,000) or ISO 14644-1 (Class 2 ~ 9)
Sampling Mode	Cumulative, differential, concentration (counts/liter), mass concentration μg/m^3, TSP and PM values) (optional)
Error Indications	Excess count limit, optics contamination, loss of laser power, insufficient battery power
Interface	USB, Bluetooth 4.0
Internal Memory	3000 measurement data (1000 sets)
Power	Li-ion polymer rechargeable battery (7.4V/5200mAH) or 9VDC1.5A AC Adapter (100~240V input)
Max. Operating Time	Continuous operation > 8 hours with Li-ion battery
Dimensions	190 (H) ×90 (W) × 46 (D) mm
Weight	< 950 grams (including battery)
Environmental Conditions	Operating: 0 ~ 50℃, < 90%RH Storage: -20 ~ 65℃, < 90%RH
Standard Accessories	AC adaptor, isokinetic probe, USB data cable, portable carry case, data download software (CD), NIST-traceable calibration certificate
Optional Accessories	Zero-count filter, digital temperature and humidity sensor probe, mini Bluetooth printer, tripod
Mass Concentration Option	HAL-HPC301MS is capable of displaying particle concentration in μg/m^3 and PM values

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Superthin 3-Channel Handheld Particle Counter

HAL-HPC300

Features

- **Simultaneously measures 3 user configurable particle sizes**
- **Counting modes with cumulative / differential / concentration / average / auto-repeat / timer**
- **Up to 1500-data (500 sets) internal memory**
- **Excess-count-limit warning**
- **USB interface for data downloading and upgrading**
- **External digital temperature and humidity probe**

HAL-HPC300 Handheld Laser Particle Counters measures particles suspended in the air in real time with applications such as microelectronics, fine mechanics, optics, pharmaceutical, medical device, food processing, and aerospace. Because of its low-cost affordability, it is also widely used for indoor/outdoor air quality (IAQ) application. The basic operating principle of the HAL-HPC300 is that pulse signals generated from laser light scattering off aerosol particles are processed and counted, based on digital signal processing. The settings of measurement parameters as well as results displayed in **total counts**, **number concentration** or/and **mass concentration** *(new feature for IAQ application)* are all controlled and realized by an internal microprocessor (MCU). The HPC300 simultaneously measures three channel sizes that are configurable by a user. The data recorded in the embedded flash memory can be downloaded with supplied software through either a USB or RS232 interface.

The HAL-HPC300 was designed in the USA and is in compliance with the international standards (JIS B 9925:1997 and ISO14644-1) and has CE certification. The HPC300 instrument is very unique compared to other manufacturers in the market; it features high sensitivity, multiple functional capabilities, and is slim, lightweight and very user friendly.

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Applications

- Clean environment monitoring
- Indoor air quality
- Test/Check filter seal and efficiency
- Trace contamination source
- Analysis of particle size distribution

Specifications

Light Source	Laser diode (>100,000 hours)
Sensitivity	0.3µm
Size Range	0.3µm~10µm
Channels	All three channels are user configurable (size selections from 0.3µm, 0.5µm, 0.7µm, 1.0µm, 2.0µm, 2.5µm, 5.0µm and 10µm)
Counting Efficiency	50±20% @0.3µm 100±10% @0.45µm
Coincidence Loss	<5% @70,000 Particles/Liter or <5% @2,000,000 particles/ft^3
Zero Count	<1 count per 5 minutes
Flow Rate	2.83 L /min (0.1cfm)
Sampling Time	User defined: (up to 59m59s) and auto repeat (up to 99 times)
Count Limit Warning	FED STD 209E (Class 1 ~ 100,000) or ISO 14644-1 (Class 2 ~ 9)
Sampling Mode	Cumulative, differential, concentration (counts/liter), mass concentration (optional), $\mu g/m^3$, can be interpreted as PM1. PM2.5, PM10 or TSP)
Error Indications	Excess count limit, optics contamination, loss of laser power, insufficient battery power
Interface	USB, RS232
Internal Memory	1500 measurement data (500 sets)
Power	Li-ion polymer rechargeable battery (7.4V/2800mAH) or 9VDC AC Adapter (100~240V input)
Max. Operating Time	Continuous operation > 5 hours with Li-ion battery
Dimensions	180 (H) ×93 (W) × 46 (D) mm
Weight	< 950 grams (including battery)
Environmental Conditions	Operating: 5 ~ 45℃, < 90%RH Storage: -20 ~ 65℃, < 90%RH
Standard Accessories	AC adaptor, isokinetic probe, USB data cable, data download software (CD), NIST-traceable calibration certificate
Optional Accessories	Zero-count filter, digital temperature and humidity sensor probe, mini printer, printer cable, tripod, portable carry case
Mass Concentration Option	HAL-HPC300MS is capable of displaying particle concentration in $\mu g/m^3$

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Two-channel Remote Sensor for Facility Monitoring System (RS485)

HAL-RPC201

Features

- Simultaneously monitors two channels
- Warning for excess of count limit
- Stainless housing
- RS485 communications
- Compatible with most existing facility monitors
- 24/7 continuous remote monitoring
- Flexible power options

The HAL-RPC201 Remote Particle Counter is the key element of an intelligent multipoint remote facility monitoring system. It is useful in measuring particle concentrations in ultra-clean environments by its single particle counting ability and classification of clean facility. The data collection and sampling time interval can be remotely carried out by a remote computer terminal. The system can run 24/7 continuously and remotely monitor the status of the clean facility and give warning of an excess of count limit preset by the user. It is in compliance with international standards (JIS B 9925:1997 and ISO14644-1) and CE certification.

The system is interfaced via RS485 and allows long distance communication. It is compatible with most of the facility monitors on the market. The instrument can be powered at the user's choice either via a RJ45 connector that integrates the communication lines with a power line or by a local power supply.

HAL TECHNOLOGY, LLC 7970 Cherry Avenue, Suite 303, Fontana, CA 92336, U.S.A.
Phone: (855) GET-HALTECH (toll free) info@haltechnologies.com http://www.haltechnologies.com

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Applications

- **Ultra-clean facility monitoring**
- **Trace contamination source**
- **Excess of count limit warning**
- **24/7 remote continuous monitoring**

Specifications

Particle Size	0.3, 0.5μm default (user may select other sizes)
Light Source	Laser Diode
Coincidence Loss	< 5% @ 2,000,000 particles per cubic feet
Flow Rate	2.83 Liter/min (0.1cfm)
Counting Efficiency	100±10% @ 0.5μm
Zero Count	<1 count per 5 minutes
Calibration Standard	JIS-B-9921 (1997), ASTM-F649-01, ASTM-F328-98 (NIST traceable)
Warning for Excess of Limit	Class 1—100,000 (FED209E) or 2—9 (ISO14464-1)
Monitoring	Continuous
Error Indication	Excess of maximum count limit, laser degradation
Interface	RJ45 (RS485 and power line)
Status Indication	Green: Power on and system ready Red: System or communication errors
Power	PoE or local AC adapter 6 ~ 9VDC
Dimensions	104 (W) × 64 (D) × 38 (H) mm
Weight	< 350 grams
Environmental Conditions	Operating: 5 ~ 50℃, < 90%RH Storage: -20 ~ 65℃, < 90%RH
Standard Accessories	Kinetic probe, user manual, AC adapter, calibration certificate
Optional	Application software for facility monitoring system

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Two-channel Remote Sensor for Facility Monitoring System (PoE Ready)

HAL-RPC200

Features

- Simultaneously monitors two channels
- Warning for excess of count limit
- TCP/IP communications
- True Ethernet connection for high-speed data transmission
- PoE ready for auto power and control
- 24/7 continuous remote monitoring
- Stainless Steel housing
- Flexible power options

The HAL-RPC200 Remote Particle Counter is the key element of an intelligent multipoint remote facility monitoring system. It is useful in measuring particle concentrations in ultra-clean environments by its single particle counting ability and classification of a clean facility. The data collection and sampling time interval can be remotely carried out by a remote computer terminal. The system can sample 24/7 continuously and remotely monitor the status of the clean facility and give warning of an excess of count limit preset by the user. It is in compliance with international standards (JIS B 9925:1997 and ISO14644-1) and has CE certification.

The unique features of this system are it's easily integrated via Ethernet (TCP/IP) communications and scalable. The remote units can be configured to as many as needed for your application; upwards to 1000 sensors can be installed within one facility system. The instrument can be powered over its Ethernet connection PoE (Power-Over-Ethernet compliant with IEEE 802.3af) for simplicity of system installation or a local power supply. Configuring your installation can be done locally with a PC or via a web browser.

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Applications

- **Ultra-clean facility monitoring**
- **Trace contamination source**
- **Excess of count limit warnings**
- **24/7 remote continuous monitoring**

Particle Size	0.3, 0.5μm (User configurable)
Light Source	Laser Diode
Coincidence Loss	< 5% @ 2,000,000 particles per cubic feet
Flow Rate	2.83 Liter/min (0.1cfm)
Counting Efficiency	100±10% @ 0.5μm
Zero Count	<1 count per 5 minutes
Calibration Standard	JIS-B-9921 (1997), ASTM-F649-01, ASTM-F328-98 (NIST traceable)
Warning for Excess of Limit	Class 1—100,000 (FED209E) or 2—9 (ISO14464-1)
Monitoring	Continuous
Error Indication	Excess of maximum count limit, laser degradation
Interface	RJ45 (TCP/IP, PoE ready)
Status Indication	Green: Power on and system ready Red: System or communication errors
Power	PoE or local AC adapter 6 ~ 9VDC/100mA
Dimensions	104 (W) × 64 (D)× 38 (H) mm
Weight	< 350 grams
Environmental Conditions	Operating: 5 ~ 50℃, < 90%RH Storage: -20 ~ 65℃, < 90%RH
Standard Accessories	Kinetic probe, user manual, AC adapter, calibration certificate
Optional	Application software for facility monitoring system, router or PoE ready router.

Specifications

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