# W LuminWave HP-High Precision FMCW LiDAR



#### Introduction

HP1 is a cutting-edge high precision ranger powered by Luminwave's innovative silicon photonic integrated circuit (Si-PIC) technology. This device revolutionizes distance measurement with its advanced frequency-modulated continuous wave (FMCW) method, delivering unparalleled accuracy and stability. Experience <1mm precision (repeatability) and <2mm absolute error for targets within 100m in the long-range mode, or achieve an astounding <20um precision up to 1m in the short-range mode.

### Specifications

| Product Number        |                          |  |   |  |
|-----------------------|--------------------------|--|---|--|
|                       |                          | LWP-HP1-1                                      | LWP-HP1-100                                     | HP1-OE   |
| Optics                | Sensor                   | Si Photonics FMCW PIC                          | Si Photonics FMCW PIC                           | Si Photonics FMCW PIC                          |
|                       | Light Wavelength         | 1550nm   | 1550nm  | 1550nm   |
|                       | Laser Class              | Class 1(IEC 60825-<br>1:2014, EN 60825-1:2014) | Class 1(IEC 60825-<br>1:2014, EN 60825-1:2014)  | Class 1(IEC 60825-<br>1:2014, EN 60825-1:2014) |
|                       | Mechanism                | FMCW   | FMCW  | FMCW   |
|                       | Light Spot Size          | 50 µ m @600mm                                  | 10mm @10m                                       |  |
| Performance           | Standard Distance        | 600mm  |   |  |
|                       | Measurement Range        | 200 ~ 1000mm                                   | 0.15 ~ 100m                                     |  |
|                       | Measurement Accuracy     | 40um   | ±2mm  |  |
|                       | Repeatability            | <b>&lt;20</b> μ m@1 σ                          | 1mm@1 σ   |  |
|                       | Mesaurement Time         | 1ms  | 1ms   |  |
|                       | Response Time            | 1ms  | 1ms   |  |
|                       | Doppler Velocity         | Support  | Support   | System-dependent                               |
| Structure             | Housing Material         | Metal  | Metal   | Metal  |
| Interface             | Interface                | EtherCAT, Ethernet, SSI, RS 232 / 422 / 485    | EtherCAT, Ethernet, SSI, RS 232 / 4<br>22 / 485 |  |
| Power Supply          | Supply Voltage           | 18 ~ 30 V DC                                   | 18~30V (DC)                                     |  |
|                       | Current                  | < 250 mA (24 V DC)                             | < 250 mA ( 24 V DC )                            |  |
| Physics               | Ambient Light Resistance | ≥ 100Klux                                      | ≥ 100Klux                                       | /  |
|                       | Cross Talk Resistance    | Support Multi-Product Operation                | Support Multi-Product Operation                 |  |
|                       | Operating Temperature    | −20°C ~ 55°C(<-10°C,<br>Warm up for 7 minutes) | −20°C- +55°C (<-10°C,<br>Warm up for 7 minutes) | -20°C-+75°C                                    |
|                       | Storage Temperature      | –40°C ~ 75°C                                   | –40°C ~ 75°C                                    | –40°C ~ 75°C                                   |
|                       | Environmental Protection | 95% (Non-Condensing)                           | 95% (Non-Condensing)                            | 95% (Non-Condensing)                           |
|                       | Humidity                 | IP65   | IP65  | IP65   |
| Product Certification |                          | CE、 ROSH                                       | CE、ROSH   |  |

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### Applications

Applicable Product Number: HP1-1



Automatic Guidance Systems Positioning

Indoor Crane Positioning

Conveyor Vehicles and Shuttle Positioning

## About LuminWave

LuminWave, founded in 2018, is a globally leading silicon photonics chip technology company specializing in the development of cutting-edge FMCW LiDAR sensors, 3D smart cameras, and customized sensing and measurement solutions tailored to the diverse needs of the market.

Headquartered in Hangzhou, China, LuminWave has established strategic R&D centers and sales offices in Xi'an, Los Angeles, forming a globalized R&D and sales network. Founded by senior silicon photonics researchers from the Massachusetts Institute of Technology (MIT), the company has gathered a professional team of experts in photonics, systems engineering, and other fields to jointly drive technological innovation and breakthroughs.

With innovation as its core driving force, LuminWave has successfully applied advanced sensor products and solutions to various industries such as advanced driver assistance systems, intelligent logistics, industrial automation, and robotics, helping enterprises thrive in an increasingly interconnected and data-driven world.

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