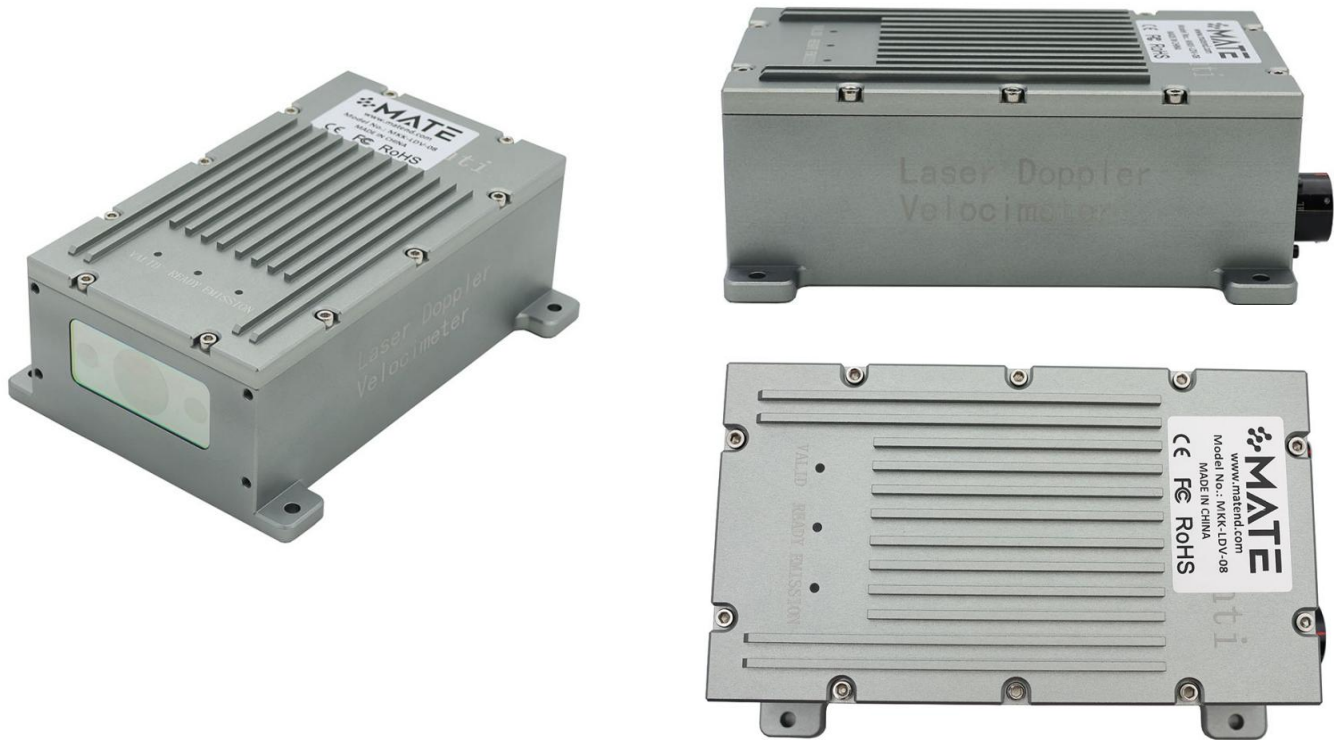


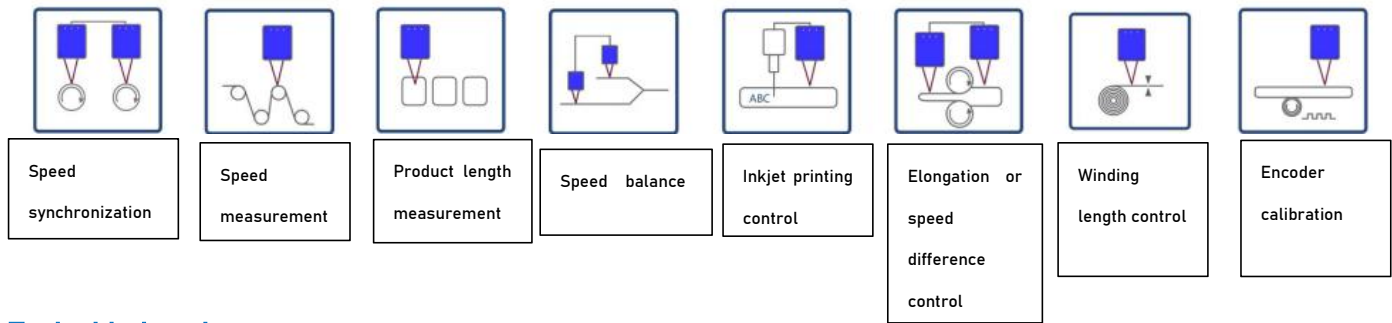
MKK-LDV

Laser Doppler velocimeters and length measuring instruments



Application Scenarios

Speed synchronization;
speed measurement;
product length measurement;
speed balancing;
inkjet printing control;
elongation or speed difference control;
winding length control;
encoder calibration
Length measurement;
Speed measurement;
sizing;
linear speed control;
speed difference and elongation control;
inkjet printing;
length and speed measurement of high-temperature steel billets in metallurgy...



Typical industries

Metallurgy, bars, pipes, cables, papermaking, corrugated paper, films, galvanizing, color coating, textiles, extrusion materials, etc.

Technical features

- Employs high-precision AD sampling and high-speed FPGA processing, resulting in high accuracy and low noise;
- Utilizes an eye-safe and advanced infrared 1550 nm band light source;
- Automatically detects motion direction;
- Measures in both forward and reverse directions, capable of measuring "0" speed;
- Capable of precise measurement on virtually any surface;
- Anti-electromagnetic interference design ensures stability and reliability;
- Bare unit adaptable to ambient temperatures ranging from -40°C to 60°C ;
- No warm-up required, immediately enters stable operating state upon power-on;
- 7×24H temperature drift-free operation, requiring no temperature compensation;

Product Series Introduction

MKK-LDV-08 Series Laser Doppler Velocimetry and Length Measurement Instrument

- Installation distance: Selectable between 13cm and 350cm
- Accuracy: $<0.05\%$
- Repeatability error: 0.02%
- Direction: Automatic detection
- Minimum speed: 0
- Maximum speed: 20000m/min
- Allowable acceleration: 600m/s
- Power supply voltage: 20 ~ 28 VDC
- Power consumption: $<11\text{W}$
- Ambient temperature: -40°C to 60°C (bare unit, without any protection)
- Electromagnetic interference resistance level: Standard level 3
- Zeroing mode: High level, low level, rising edge, falling edge
- Signal output: AB pulse, RS422, RS485, TCP/IP
- Pulse parameters: 5V/24V selectable
- Pulse output: Editable
- Industrial protocols: Modbus, Profinet
- Sampling time: 0.01ms (100,000 times per second)
- Protection level: IP66



Product Series Introduction

MKK-LDV-09 Water-Cooled Integrated Speed and Length Measuring Instrument

This product features a water-cooled integrated design, significantly reducing overall load weight and size while greatly improving cooling capacity and facilitating installation. It can directly measure objects in high-temperature environments such as continuously cast steel billets above 1200°C, hot-rolled plates, and pipes.

Dimensions: 224×120×100 mm

Weight: <6 kg (excluding coolant)

Nominal Measurement Distance: 700~3500 mm

Water Cooling Interface: External Thread 1/4



MKK-LVD-10 Bar Production Line Dedicated Speed and Length Measuring Instrument

The MKK-LVD-10 features an anti-vibration design, enabling precise measurement of the speed and length of bars that are simultaneously vibrating up and down during high-speed movement, effectively solving the problem of length measurement on bar production lines.

Dimensions: 211×146×76.5 mm

Weight: 3.5 kg

Jitter Amplitude: ≤10mm

Measuring Distance: 1000mm

Accuracy: ≤ 0.05%



MKK-LVD-11 Miniature Doppler Velocimetry and Length Measurement Instrument

Installation distance: 13cm

Small and miniaturized size, suitable for installation in confined spaces

Separate design for detection and data processing

Dimensions: 70×90×48 mm

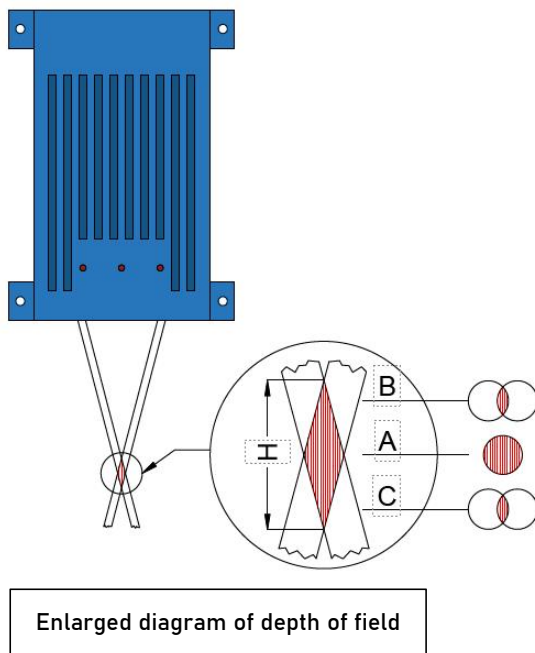
Automatic direction detection, can detect speeds from 0 to 60 degrees Celsius

Wide temperature range: -40°C~60°C

No warm-up required, immediately enters stable working state with no temperature drift upon power-on



Depth of field introduction



Laser Doppler velocimeters employ a dual-beam design. Using a 100cm installation distance as an example:

Two parallel beams, each 5mm in diameter, intersect precisely at a distance of 100cm from the velocimeter's glass window. The intersection of the two beams forms a "rhombus" shape, as shown in the diagram. The surface of the object being measured must be at the intersection of the two beams to generate the Doppler effect and thus a Doppler signal.

The longitudinal length H of the "rhombus" is called the depth of field.

In the magnified diagram of the Doppler signal depth of field, at the origin (point A 100cm away, the two beams completely overlap, resulting in the strongest Doppler signal and the highest measurement accuracy. Moving away from the origin (points B and C, the area of intersection gradually decreases, the Doppler signal weakens, and the measurement accuracy decreases accordingly.

This is the optical principle of a Doppler velocimeter. Therefore, it is crucial to install the Doppler velocimeter carefully and strictly according to the specified distance.

Installation Guide

For example: If there are four different thicknesses of steel plates, ranked from thinnest to thickest as H1, H2, H3, and H4; the height difference between the thickest and thinnest plates is $H4 - H1$. Therefore, the distance from the speedometer to the thinnest steel plate is $1000 + (H4 - H1)/2$; the distance from the speedometer to the thickest steel plate is $1000 - (H4 - H1)/2$.

This ensures that the surfaces of all steel plate thicknesses are as close as possible to the origin, thus obtaining the best Doppler signal.

