LED Type CMD

LAV-10/11

This is a new optical fiber type CMD using semi-conductor laser as light source. This equipment is composed of transmitter (Sensor head, heat-resistance fiber and amplifier) and receiver and detects steel material which passes through between them. It emits more powerfully compared with LED type so that high performance with margin in bad environment is possible.

- It is capable of being used within the scope of 100 to 240VAC.
- Water-cooling or air-purge isn't required for sensor head because non-air dust purge hood is applied.
- 8-point LED display unable to monitor the margin and emitting state.
- Warning output is provided.

### Specifications

<table>
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<tr>
<th>Type</th>
<th>Through-beam type</th>
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| Model No. | Amp. unit: basic type LAV-10P · Strong power type LAV-11P (Projector), LAV-10A (Receiver)  
Sensor head: FHM-211-1 · FHM-311  
Fiber unit*: FHV-321 (2m) · FHV-351 (5m) · FHV-411 (10m) |
| Power source | 100 to 240VAC (10%, -15% 50/60Hz) |
| Power consumption | Projector: 5VA or less, receiver: 5.5VA or less |
| Laser class | LAV-10P: JIS/IEC class1, LAV-11P: JIS/IEC class3R |
| Detection distance | 50m (Detecting margin: 10,000 times or more at 10m*) |
| Detectable object | Steel material with >100 or more (FHM-311) |
| Response time | Contact output: 40msec or less, photo-coupler output: 30msec or less |
| Operating mode | Changeover of Dark-ON/Light-ON |
| Control output | 1C relay contact (250VAC 3A, 30VDC 5A, COS =1), Photo-coupler (120V or less, 100mA) |
| Light-emission amount lowering output | DC voltage output in proportion to light-reception amount (Saturated value 9V or more but do not use it except for adjustment) |
| Analog output | Connection |
| Connection | Connector type (Cable 2m) |
| Fiber characteristics | Allowable bending radius: 100mm, Max. pressure: 784MPa, Tension strength: 490N |
| Ambient illuminance | 10,000lux or less (Incandescent lamp) |
| Ambient temperature | Amp. unit: -10 to +55°C, Sensor head · Fiber unit: -10 to +200°C |
| Ambient humidity | 45 to 85%RH (not icing, not condensing) |
| Insulation resistance | 20MΩ or more (between power/output contact and case, by megohmmeter with 1,000V) |
| Withstand voltage | AC1,500V, 1min. (between power/output contact and case) |
| Vibration resistance | Double amplitude 1.5mm, 10 to 55Hz, each 2 hour in X, Y and Z directions |
| Impact resistance | 490m/s², each 3 times in X, Y and Z directions |
| Protective structure | Amp. unit: IP64 (IEC Standard), Sensor head: IP66 (IEC Standard)  
Fiber unit: Corrugated tube with blade (SUS) |
| Case materials | Amp. unit: Aluminum die-casting, Sensor head: Aluminum |
| Weight | Amp. unit: Approx. 950g, Sensor head: FHM-211-1 Approx. 1.5kg, FHM-311 Approx. 4kg  
Fiber unit: FHV-321 Approx. 1.0kg, FHV-351 Approx. 1.8kg, FHV-411 Approx. 2.8kg |

*1. 3m, 15m and 20m type are also available.  
*2. In case of using FHV-321 and FHM-211-1.  
★Photo-mos relay type for control output is also lined-up.

### Cautions for Laser Product

This product is radiating the infrared laser beam and is classified as Class 1/3R by JIS C6802:2005/IEC 60825 Laser Safety Standard. Refer to Page 159.

⚠️ Warning

Don't view the laser beam directly or expose it to human eyes. It may injure human eyes or damage health.
■ Characteristic data (Typical example)

**Projector/receiver LAV-10P/LAV-10A**

![Graph showing detecting distance in meters vs. light-receiving level in times for different detectable distances.]

**Projector/receiver LAV-11P/LAV-10A**

![Graph showing detecting distance in meters vs. light-receiving level in times for different detectable distances.]

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■ Connection

**Projector**

- Red
- Pale blue
- Pink
- Yellow
- Yellowish red
- Yellowish green

**Receiver**

- Red
- Pale blue
- White
- Gray
- Yellow/red
- Yellow/green
- Brown
- Blue
- Green

- Light-emission amount lowering output
- Synchronous input
- Emission stop input
- Light-emission amount lowering output
- Power source

- Control output
- Warning output
- Power source

- Operating mode
  - NORMAL
  - ABNORMAL

- Operating mode can be changed by inner switch

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■ External dimensions

**Amplifier (Common use for projector/receiver)**

![Diagram of amplifier dimensions with various components labeled.]

■ Optical axis adjustment

Optical axis adjuster, TES-113 is also available as an option. (Ask us in details) This is using red laser element (Class 2) and it is easy to adjust optical axis visually.