F F DRL-60-12 Laser Distance Sensor User Manual

Contents

F F DRL-60-12 Laser Distance Sensor

Product Information

Specifications

- **Model**: DRL-60-12
- **Type**: Laser distance sensor
- **Power Supply**: 12 V DC

Features

- Soft start and soft shutdown of the lighting
- Supports dimmable light sources

Mounting

1. Select a location for mounting the sensor where there are no fixed obstacles in the detection cone.
2. Refer to the figure to determine the diameter of the detection cone based on the operating distance.
3. Attach the mounting frame to the box using screws or claws.
4. Connect the DRL-60-12 according to the selected wiring diagram.
5. Consider voltage drop on cables when selecting cable cross-section in low-voltage installations.
6. Use the dials to set the operating parameters of the detector: detection range, brightness level, and switching time of the light.
7. Slide the detector into the box and press it onto the mounting frame. The magnets in the detector will hold it in place.

Description of Control Terminals
The sensor is designed for a voltage supply of 12/24 V DC. Connecting the device to a 230 V mains voltage will cause damage.

Terminal	Function
Sensor power supply +12/24 V DC	Power supply for the sensor
Sensor power supply 0 V	Ground for the sensor
Lighting control output	Output for controlling the lighting

Settings

- When working with AS-225 controllers, set the TIME knob to a minimum value (0 min.).
- In the case of an external relay control, flickering of the relay contacts may occur when the soft-start function is active.

Connection Diagrams

Direct Connection of Lighting

Direct Connection Diagram

Connection of the AS-225 Cascade Controllers

Cascade Controller Connection Diagram

Signalisation
The DRL-60-12 sensor is equipped with an LED on the front of the device to indicate the operating status

- Sensor on standby, no obstacles in the detection area.
- An obstacle in the detection area has been detected. The light was not switched on because the brightness level was too high.
- An obstacle in the detection area has been detected. The light is on.
- Signaling that the acceptable temperature inside the sensor is exceeded. Sensor operation is blocked until the fault has been removed.

FAQ

- **Q: Can I dispose of this device in the trash?**
  A: No, according to the Law on Waste, electro devices should not be disposed of in the trash. They can be given free of charge to collection points or stored when purchasing new equipment.
- **Q: What should I do if the sensor is not detecting obstacles?**
  A: Make sure there are no fixed obstacles in the detection cone and check the operating parameters of the detector.
- **Q: Can I connect the sensor to a 230 V mains voltage?**

A: No, connecting the sensor to a 230 V mains voltage will cause damage. It is designed for a voltage supply of 12/24 V DC.

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DRL-60-12
Laser distance sensor, 12 V

- Do not dispose of this device in the trash along with other waste!
- According to the Law on Waste, electro coming from households free of charge and can give any amount to up to that end point of collec?on, as well as to store the occasion of the purchase of new equipment (in accordance with the principle of old-for-new, regard-less of brand). Electro thrown in the trash or abandoned in nature, pose a threat to the environment and human health.

Purpose

- The DRL-60-12 is a laser sensor designed to control lighting, especially in corridors and staircases.
- The principle of operation is to emit a light beam and measu-re the delay of returning light as a result of reflection from an obstacle. On this basis, it is possible to precisely determine the distance to the obstacle, which is then compared with the set detection range.
- The condition for switching on the light is the presence of an obstacle at a distance smaller than the set detection range and a brightness level below the value set on the sensor.
- This solution is perfect for switching on lighting circuits for exam-ple on open stairs, where it is important that the sensor detects presence only on the stairs and ignores everything that happens outside.

Features

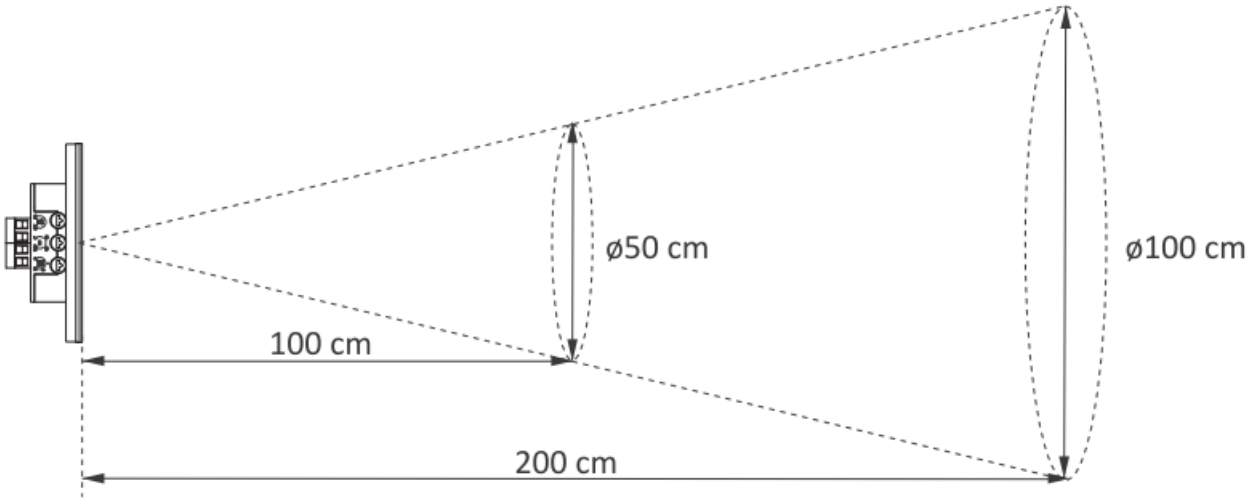
- Laser distance sensor of the ToF (Time of Flight) type;
- The detection range can be smoothly adjusted in the range of 0.1 to 2 m;
- A brightness sensor that prevents the light from being swit-ched on when the brightness level is high;

- Adjustable time of keeping the light on;
- Ability to directly control the 12/24 V lighting circuits (load capacity up to 4 A, which can be increased by connecting LED-AMP amplifiers);
- Soft start and soft shutdown feature available for controlled lighting circuits*;
- Ability of integration with AS-225 and AS-225D staircase lighting timers;
- Compact size, can be mounted in a ø60 mm box;
- LED indicating the operating status of the sensor;
- Thermal protection against exceeding the acceptable temperature inside the housing.

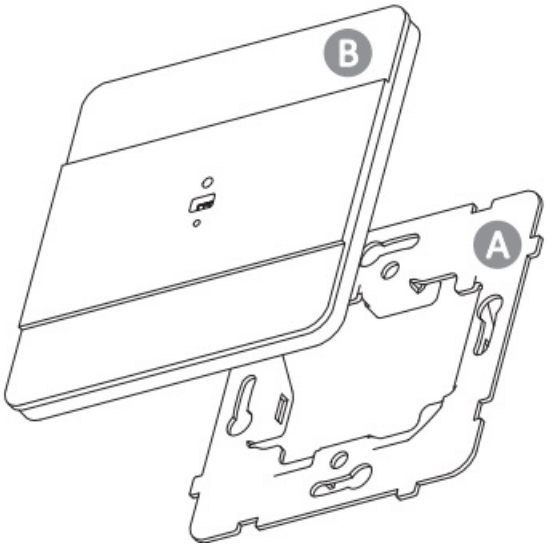
Soft start and soft shutdown of the lighting works when the support time is set to a value greater than zero and when dimmable light sources are connected to the sensor.

Mounting

1. The location of the mounting of the sensor should be selected in such a way that no fixed obstacles such as floor, wall, staircase step, etc. can be found in the detection cone of the sensor at the assumed operating distance. The diameter of the detection cone, depending on the set operating distance, can be read from the following figure:



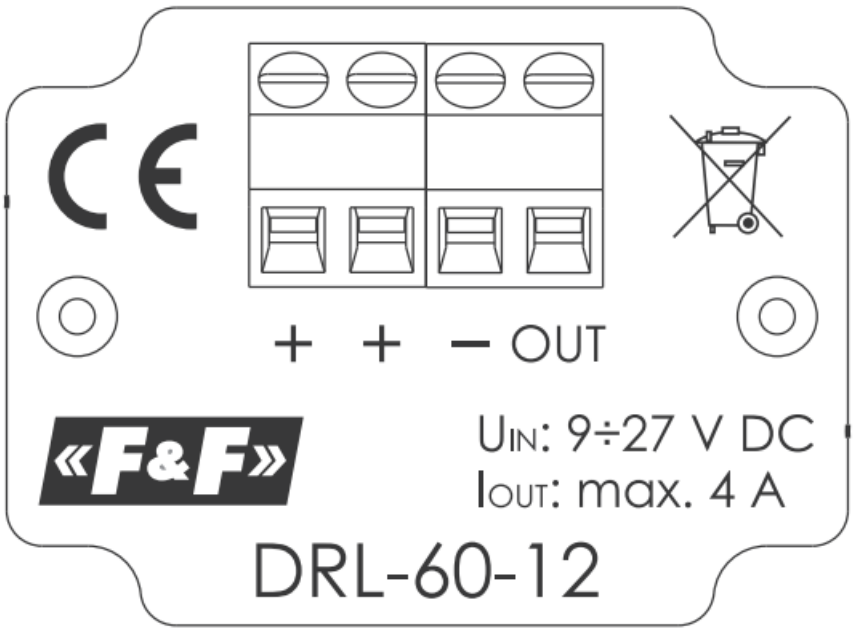
   Failure to observe safety distances may lead to unwan-ted sensor excitation.
2. Do not mount the sensor with the front-facing a strong light source, as this may lead to incorrect operation of the distance and light intensity measurement system.
3. Do not mount sensors opposite each other or mirrors, as this can lead to unwanted sensor excitation.
4. Prepare a hole for the installation box ø60 mm. The minimum recommended depth of the box is 30 mm.
5. The sensor consists of 2 elements connected together by magnets: mounting frame A and sensor B.



6. Attach the mounting frame to the box using screws or claws.
7. Connect the DRL-60-12 according to the selected wiring diagram.
   When selecting the cable cross-section in low-voltage installations, it is necessary to take into account the voltage drop on the cables related to the length and load of the cable.
8. Use the dials to set the operating parameters of the detector: detection range, level of brightness below which switching will occur and switching time of the light.
9. Slide the detector into the box and press it onto the mounting frame. The magnets in the detector will prevent the detector from pulling out automatically.

Description of control terminals

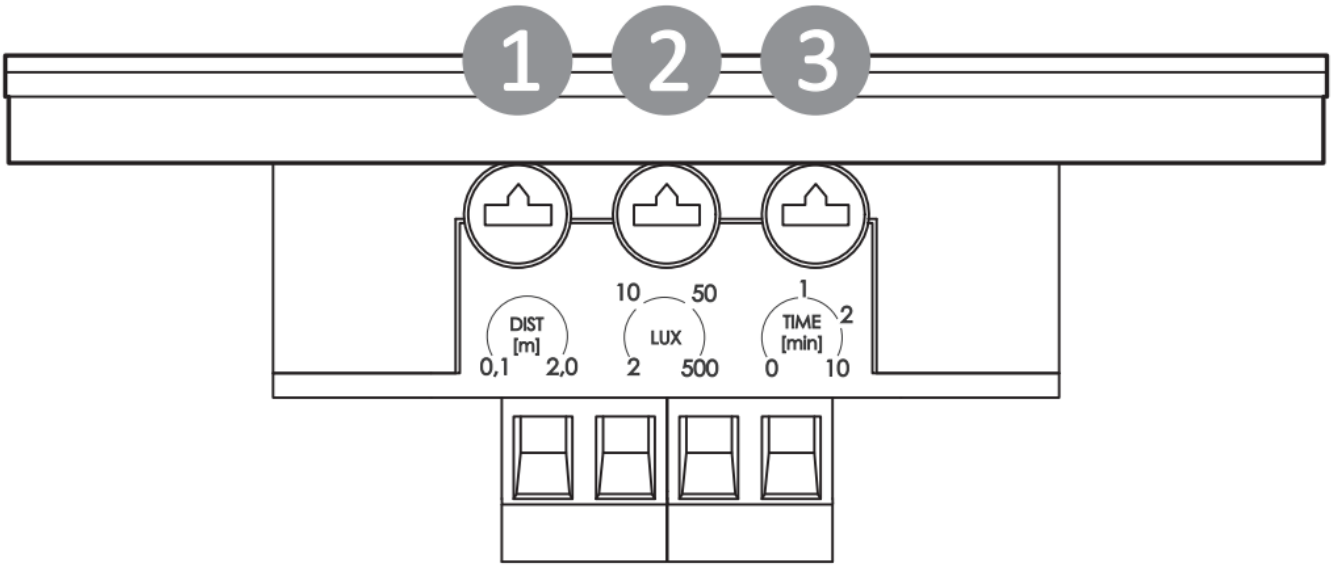
The sensor is designed for the voltage supply of 12/24 V DC. Connecting the 230 V mains voltage will destroy the device.



Terminal	Function
+	Sensor power supply +12/24 V DC
+	
–	Sensor power supply 0 V
OUT	Lighting control output

The DRL-60-12 is equipped with an open collector type output. This means that the lighting to be controlled must be connected between the “+” of the power supply and the OUT output of the controller.

Settings

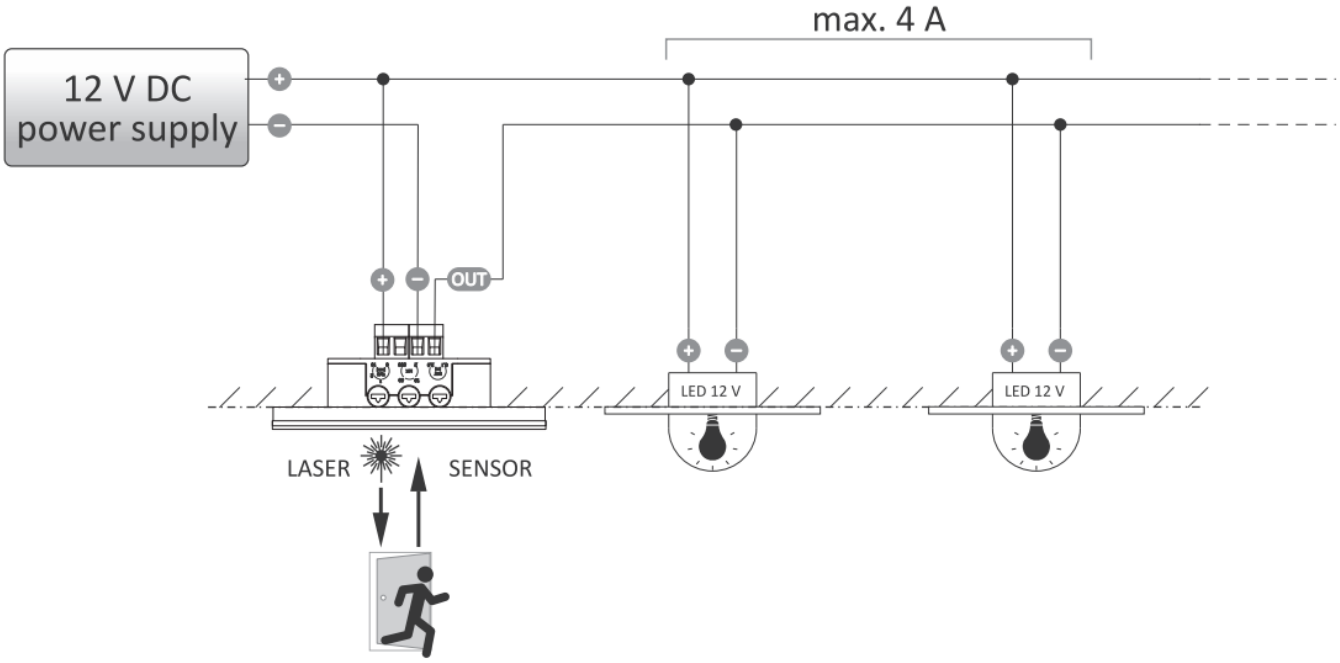


No.	Knob	Range	Function
1	DIST	0.1÷2.0 m	**Setting the sensor detection range.** If an obstacle appears at a distance shorter than that set by the knob, the lighting will be switched on (if the illumination condition is also met).
2	LUX	2÷500 Lx	**Brightness level setting.** If the light intensity is lower than the value set by the knob, the light will switch on when the presence is detected in the detection area.
3	TIME	0÷10 min.	**Lighting support time.** The light will switch on when presence is detected in the detection area, the countdown time will start when there is no more obstacle in the detection area. **Attention!** Setting the time to 0 disables the smooth brightening/dimming function.

- When working with AS-225 controllers, set the TIME knob to a minimum value (0 min.).
- In the case of an external relay control, when the soft–start function is active (when the time is set to a value greater than zero), the phenomenon of flickering of the relay contacts may occur at the moment of switching on/off.

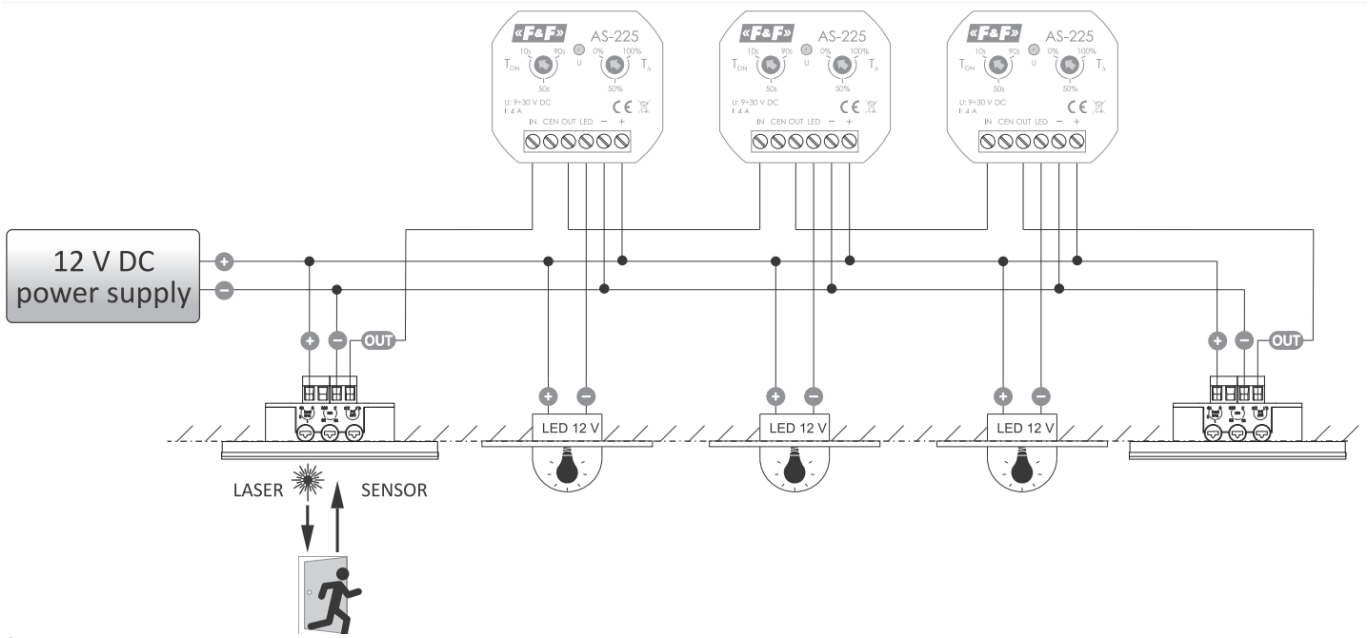
Connection diagram

Direct connection of lighting



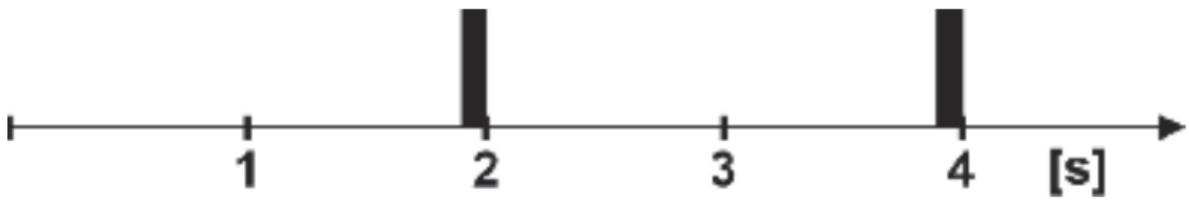
- If it is necessary to control a load greater than 4 A, the LED-AMP-1P signal amplifiers (mounting in an installation box ø60) or LED-AMP-1D (mounting on a DIN rail) should be used. An example connection diagram can be found on the product subpage at www.fif.com.pl

Connection of the AS-225 cascade controllers



Signalisation

- The DRL-60-12 sensor is equipped with an LED on the front of the device, which indicates the operating status of the device:



- Sensor on standby, no obstacles in the detection area.

- An obstacle in the detection area has been detected. The light was not switched on because the brightness level was too high.

- An obstacle in the detection area has been detected. The light is on.

- Signalling that the acceptable temperature inside the sensor is exce-eded. Sensor operation is blocked until the fault has been removed.
- Too high temperature can be caused by connecting a too high load to the sensor.
- The brightness level of the signal LED adjusts to the am-bient brightness (high ambient brightness – high LED bri-ghtness level). When an overtemperature is indicated, the light flashes at maximum brightness.

Technical data

- power supply 9÷27 V DC
- maximum load current 4 A
- detection range (adjustable) 0.1÷2.0 m
- brightness level (adjustable) 2÷500 lx
- switch-on time (adjustable) 0÷10 min.
- detection
- sensor ToF laser sensor
- wave length 940 nm
- security 1st class
- beam scattering ±18°
- power consumption 0.3 W
  terminal 2.5 mm² screw terminals
- tightening torque 0.4 Nm
- working temperature -10÷45°C
- dimensions
- external 80×80×6,5 mm
- internal (box) ø60 mm, depth= 25 mm
- mounting flush-mounted
- ingress protection IP30

Warranty

The F&F products are covered by a warranty of the 24 months from the date of purchase. Effective only with proof of purchase. Contact your dealer or directly with us.

CE declaration

- F&F Filipowski L.P. declares that the device is in conformity with the essential requirements of The Low Voltage Directive (LVD) 2014/35/EU and the Electromagnetic Compatibility (EMC) Directive 2014/30/UE.
- The CE Declaration of Conformity, along with the references to the standards in relation to which conformity is declared, can be found at **www.fif.com.pl** on the product page.

Documents / Resources

	**F F DRL-60-12 Laser Distance Sensor** [pdf] User Manual DRL-60-12 Laser Distance Sensor, DRL-60-12, Laser Distance Sensor, Distance Sensor, Sensor

References

- **Automatyka przemysłowa i domowa - producent F&F**
- **User Manual**