Direction Detection Ltd.
Auto rail light switch.

Direction Detection Ltd. manufacture ‘Auto rail light switches’ to control trailer lights based on the direction of travel.

Operating Principle

Sensing is by means of a magnet on the vehicle wheel. A 50 Gauss south pole magnetic field triggers two hall effect switches, and the triggering order defines the vehicle direction.
Two LEDs indicate when the switches are triggered.
When neither switch has detected a change for 10 seconds, the vehicle is assumed to be stationary.

Inputs & Outputs

The sensor operates from 10 to 30 volts and draws 10mA of current, in addition to the load current, to power the outputs.
Four current-sourcing outputs are supplied, controlling white and red lights in each direction.
When first powered-up, white lights are displayed both ends for 10 seconds to allow for lamp testing.
When the vehicle moves, white lights are displayed in the direction of travel and red in the other direction.
When the vehicle is stationary, red light are shown in both directions.
Each output sources up to 150 milliamps of current at a nominal operating voltage of 12 to 24 volts.
The outputs are protected against short circuits and the input is protected against incorrect polarity.
The unit is designed for driving LED lamps. If used to operate a relay then a diode must be connected in parallel with the relay coil to suppress the back emf.

Housing

A stainless steel threaded enclosure allows for through-hole mounting. Two nuts and an orientation washer are supplied. All the components are sealed in the housing to IP68. The body of the sensor is 25 mm diameter and 80 mm long with 50 mm of thread (M25 x 1.5 conduit thread) to allow for adjustment to suit the magnet. The body has a small flat on one side to fit the orientation washer.
The magnet has to be from 2 mm to 12 mm from the sensing face.
The sensor includes 2 m of cable, supplied in flexible conduit.

Installation Instructions

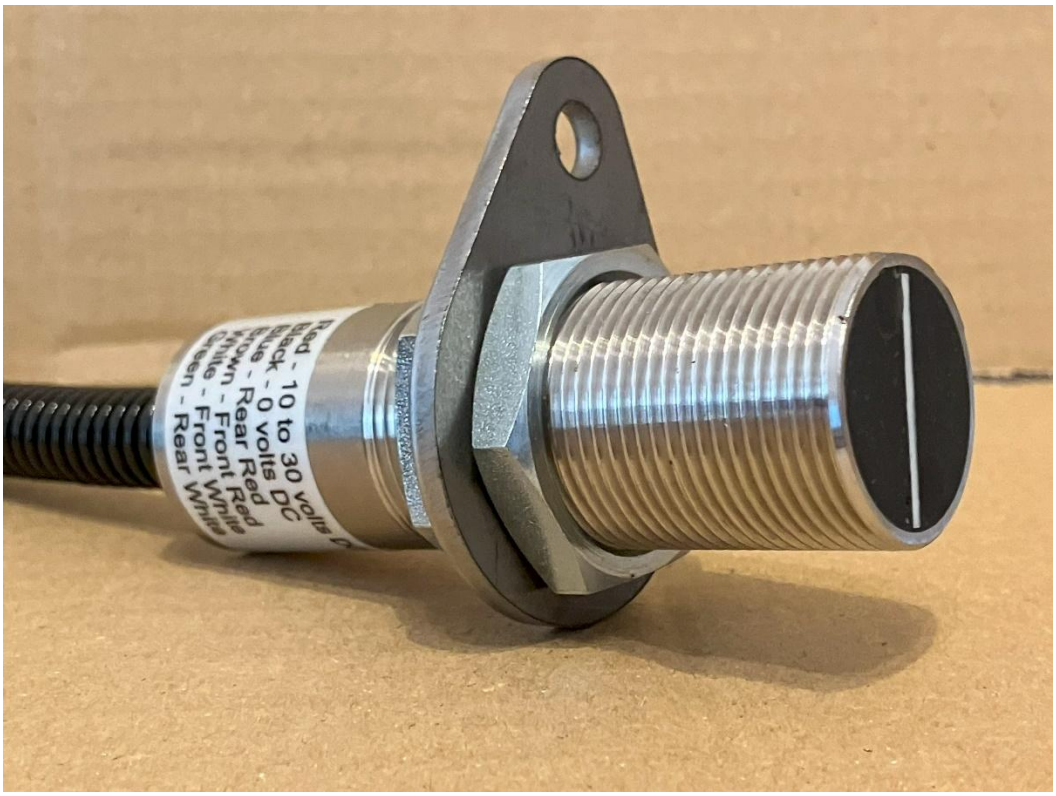
The south pole of a magnet must be mounted onto the wheel of the trailer such that the magnet can pass in front of the direction sensor unit.
One method of mounting the magnet is to machine a recess into the inner face of the wheel and bond the magnet into the recess.

The detector has to be positioned so that the magnet travels along the white line moulded in the sensing face of the direction sensor. The magnet can be spaced 2mm to 12mm from the sensor.

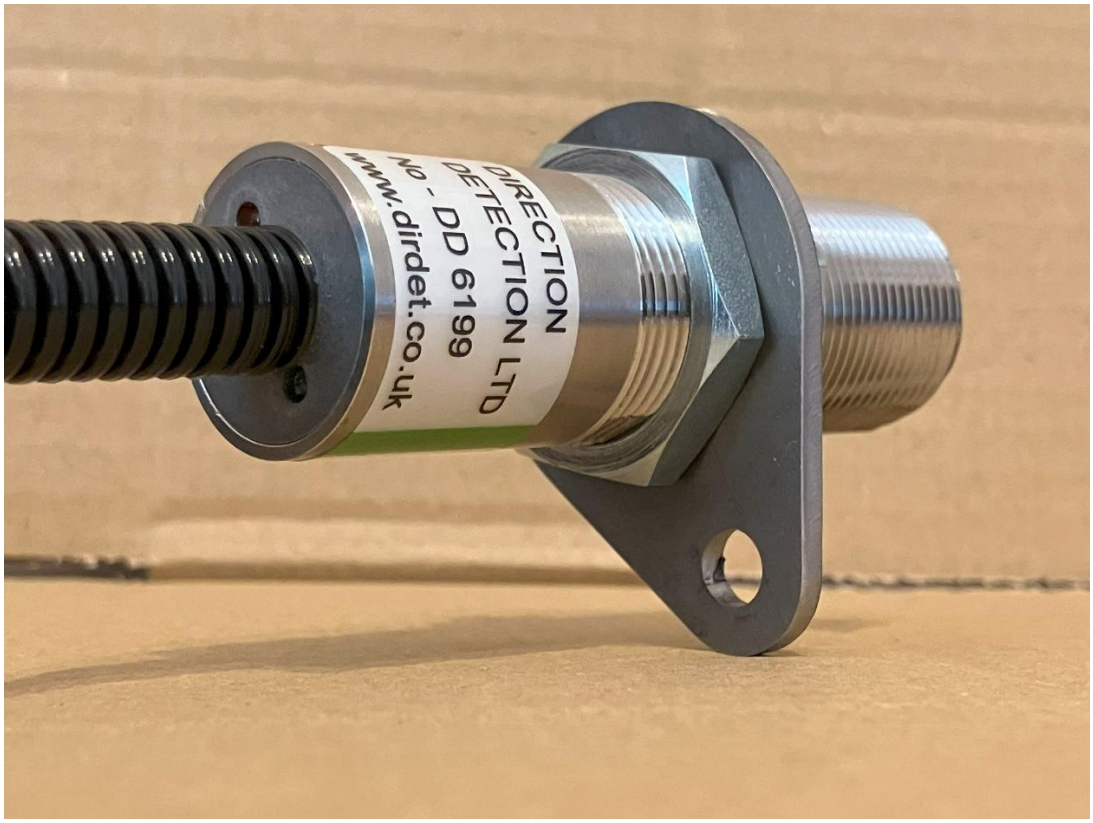
An anti-rotation lug washer is provided to ensure that the sensors can only be fitted one way round.
The washer must be bolted or welded to the trailer and painted.
The flat portion of the sensor fits near the lug and is at the end of the white line corresponding to the green LED. If the magnet passes the Amber LED first then the white output wire will illuminate the white light as forward and the blue output wire will illuminate the red light as a rear light.
Reverse direction and the green output wire will illuminate the white light and the brown output wire will illuminate the red light.

The unit can be mounted on either side of the trailer as long as the amber/green sequence is set correctly.
All the direction sensors are identical so they are interchangeable.
This sensor can replace the previous model (without the flat portion). Older sensors can be upgraded by filing a 7 mm wide flat on the thread near the green LED

If the magnet has a north pole outwards the sensing elements will not function.
The unit is designed for driving LED lamps. If used to operate a relay then a diode must be connected in parallel with the relay coil to suppress the back emf.
If the 150 mA output is exceeded the lights flash once every 10 seconds.

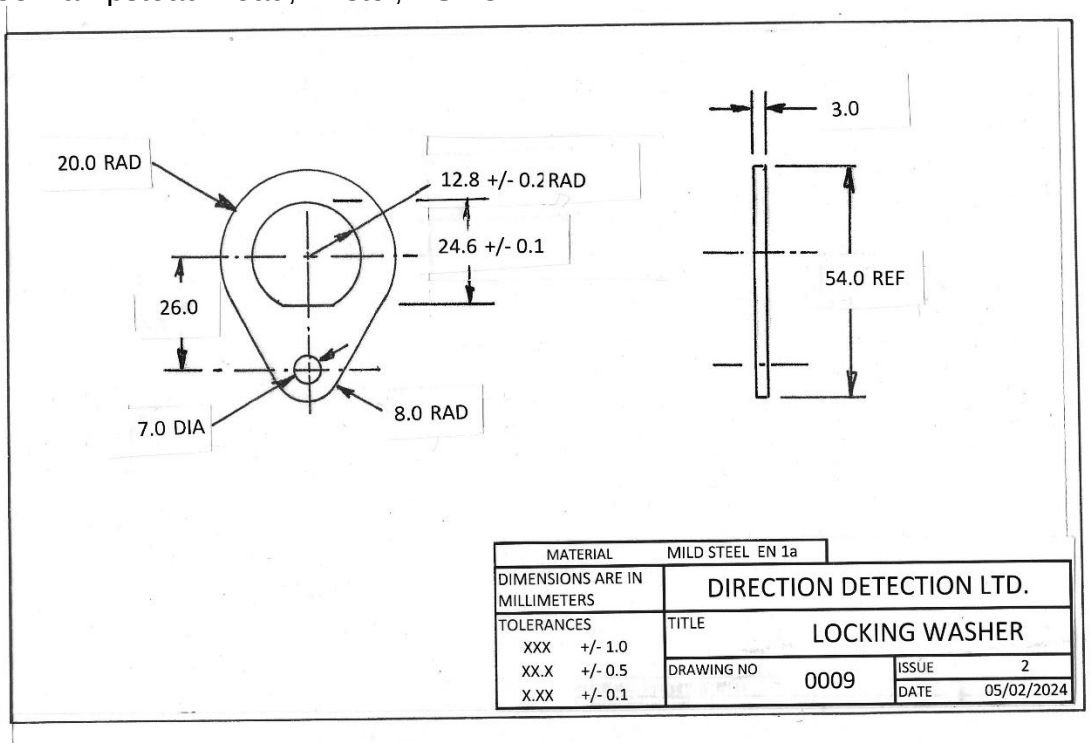


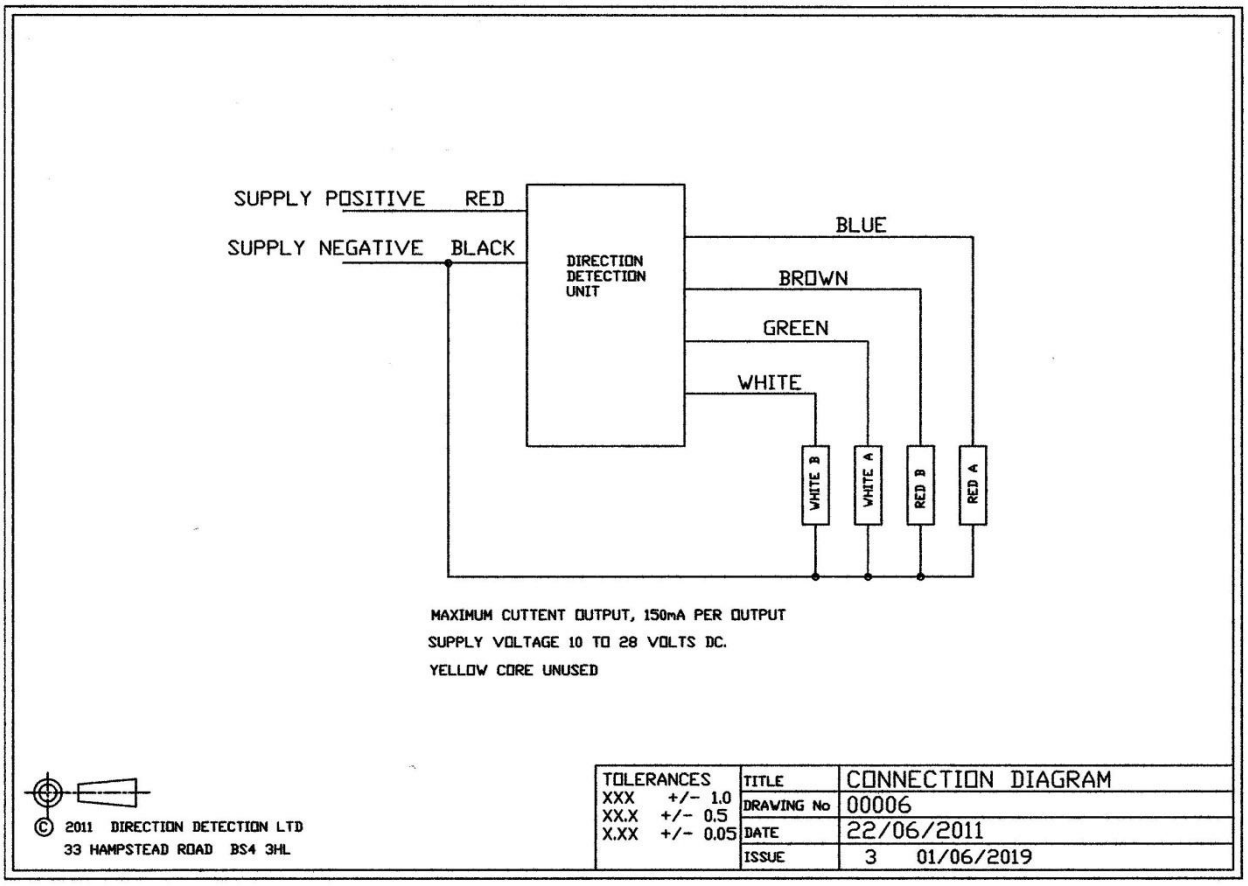
Sensing end with moulded in white line.

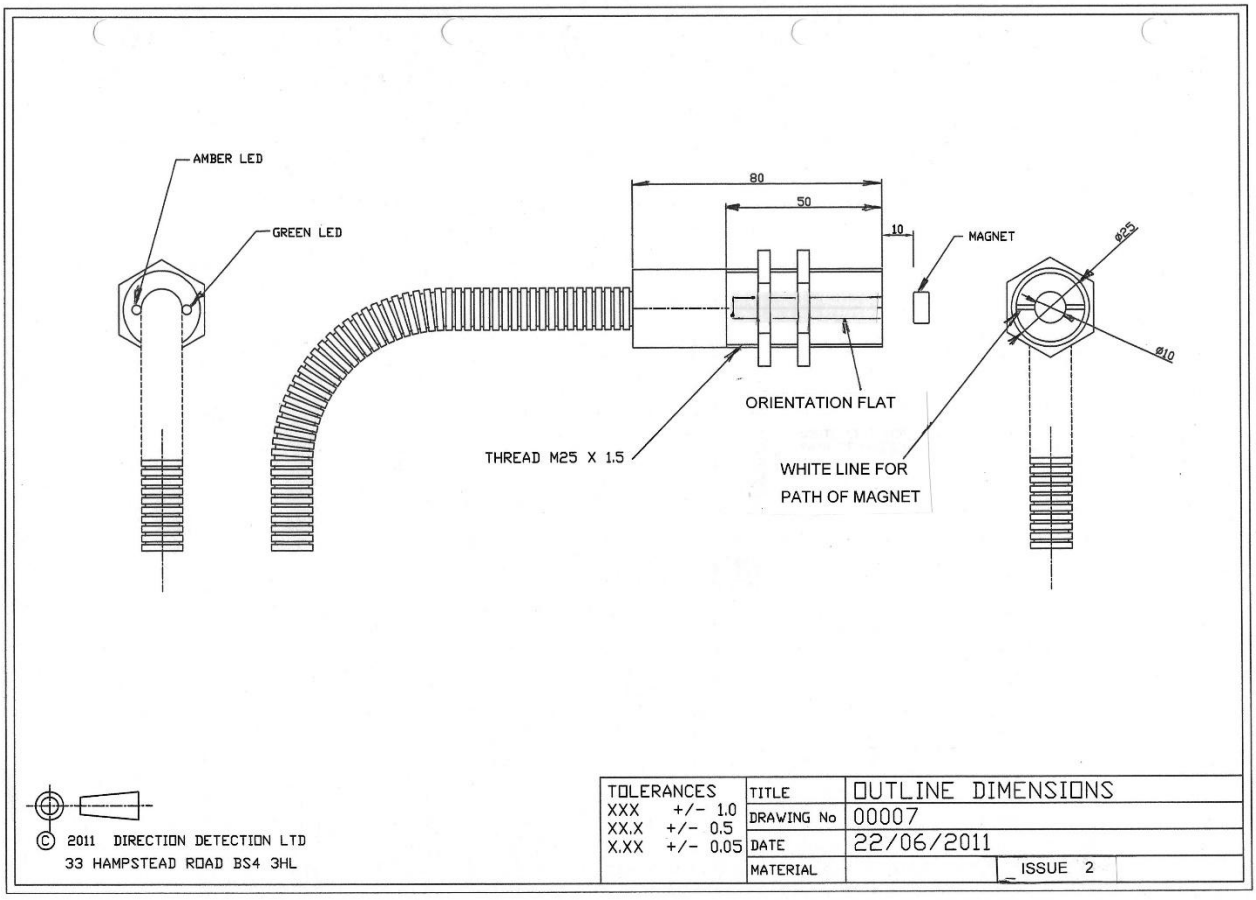


Cable end with green and amber LEDs

For more details or to purchase, e-mail enquiries@dirdet.co.uk
or telephone 07856 652218
Direction Detection Ltd
33 Hampstead Road, Bristol, BS4 3HL




SUPPLY POSITIVE RED
SUPPLY NEGATIVE BLACK
DIRECTION DETECTION UNIT
BLUE
BROWN
GREEN
WHITE
WHITE B
WHITE A
RED B
RED A
MAXIMUM CUTTENT OUTPUT, 150mA PER OUTPUT
SUPPLY VOLTAGE 10 TO 28 VOLTS DC.
YELLOW CORE UNUSED
© 2011 DIRECTION DETECTION LTD
33 HAMPSTEAD ROAD BS4 3HL
TOLERANCES
XXX +/- 1.0
XX.X +/- 0.5
X.XX +/- 0.05
TITLE CONNECTION DIAGRAM
DRAWING No 00006
DATE 22/06/2011
ISSUE 3 01/06/2019


AMBER LED
GREEN LED
80
50
10
MAGNET
ø25
ø10
ORIENTATION FLAT
THREAD M25 X 1.5
WHITE LINE FOR
PATH OF MAGNET
© 2011 DIRECTION DETECTION LTD
33 HAMPSTEAD ROAD BS4 3HL
TOLERANCES
XXX +/- 1.0
XX.X +/- 0.5
X.XX +/- 0.05
TITLE OUTLINE DIMENSIONS
DRAWING No 00007
DATE 22/06/2011
MATERIAL
ISSUE 2