

H27623

Light Gate

NFU401



Purpose

The light gate is used in a variety of experiments requiring accurate timing measurements. For example, motion experiments with linear air track vehicles, dynamics trolleys and free fall objects. From timing their passage through a gap, dynamic properties such as speed and acceleration can be derived.

Our Light Gates are compatible with all Philip Harris and Unilab timers, including the Motion QED, which has been specifically designed for use with the Master and Slave Light Gates. The Light Gate can either be used on its own, or in conjunction with other slave Light Gates (any timer) or the Master Light Gate and a Motion QED.

Apparatus

The light gate has a bright red LED in the main body, and a sensitive photo-transistor on its arm. When this path is blocked, the signal LED on the front panel lights.

Power

The light gate is not particular in its requirement for power. The bridge rectifier will accept 9-25V a.c. or d.c. When properly powered, the bright red LED will be easily visible on the end of the arm, and blocking it should cause the signal LED to turn on.

Bulb

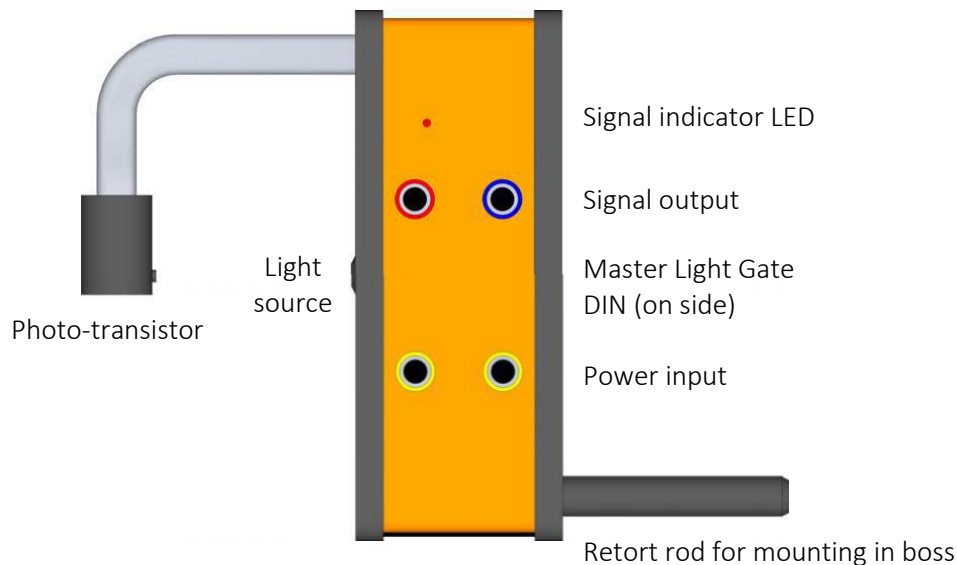
Specification: 12V 2.2W MES, available from Unilab spares or electrical component suppliers. To replace the bulb, unscrew the two side retaining screws on the main unit. Lift out the side and back casing. It may be necessary to slacken off the two yellow input sockets, this will give enough clearance to remove and replace the bulb.

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Using the Light Gate

Using four 4mm leads, connect the power supply to the lower two sockets (yellow) and your timer to the upper two sockets. Please ensure polarity is correct for the signal output, and refer to the timer manual for correct wiring for your experiment.

Alternatively, if you are using with a Motion QED please see below.



Common Problem – “Always Blocked”

If the signal LED is lit even without an apparent blockage, this is most likely due to the alignment of the light source and photo-transistor. The cylindrical head on the end of the arm can be twisted round gently, until the photo-transistor is facing the light source.

In the unlikely event that this does not fix the problem, connect a resistance meter to the signal output. The resistance should be a few k Ω when the gate is unblocked, and effectively infinite when the gate is blocked. Passing this test implies the signal LED is faulty, but the gate itself is functional. Failing this test implies the photo-transistor is faulty. In either case, contact Philip Harris to arrange a repair.

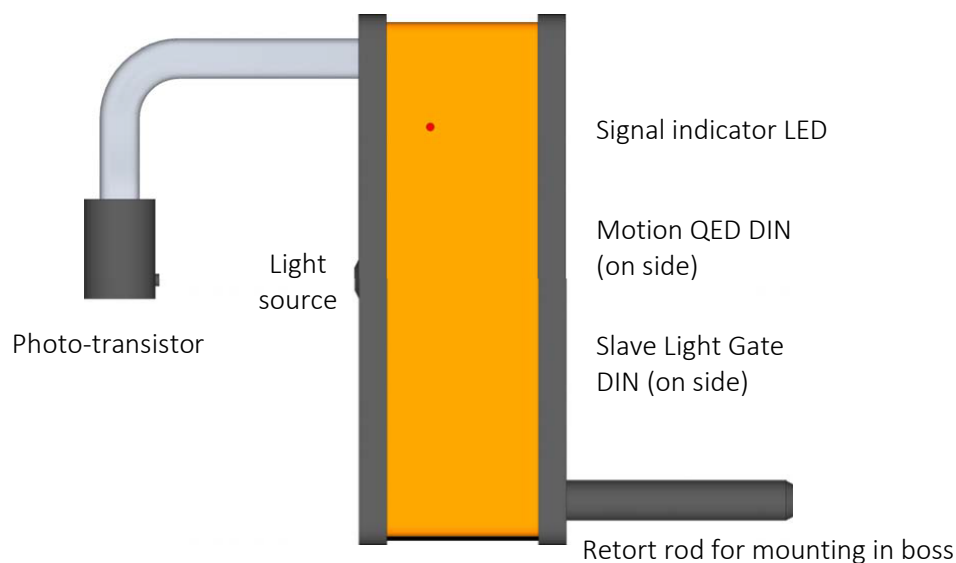
Motion QED and Master Light Gate

The Master Light Gate is designed to work with Motion QED and a standard “Slave” Light Gate, providing a simple to setup two light gate and timing solution

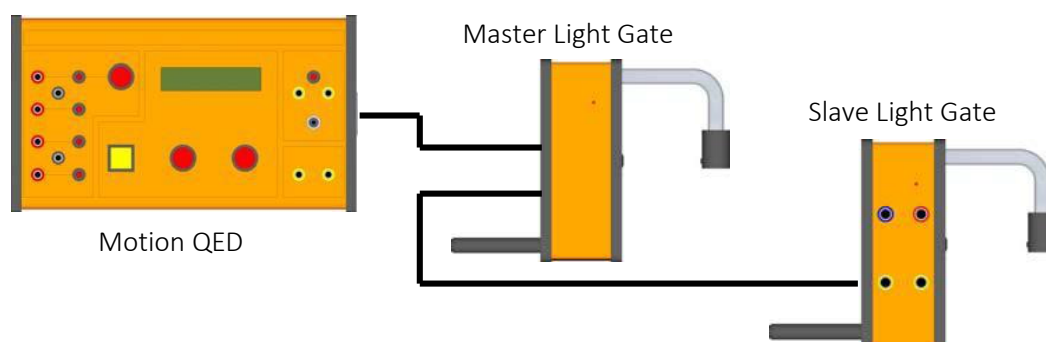
A DIN lead carries power from Motion QED to the Master Light Gate, and then a further DIN lead carries power from the Master Light Gate to the Slave Light Gate.

The same DIN leads carry the signal back from the Slave Light Gate and Master Light Gate to Motion QED.

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The Master Light Gate and Motion QED, therefore, replace the need for an untidy eight- cable setup and separate power supply, with a tidy two-cable setup, with power supplied by Motion QED's plug-top adaptor.



Older Light Gates

Older versions of the light gate used an incandescent bulb. They may be marked with Unilab catalogue number 414.032, or similar.

It must be run off 12V AC or DC.

Photo-transistor test

This is as with the LED version of the light gate. When unblocked, the resistance across the signal output sockets should be a few k Ω , and between 5 and 6 M Ω when blocked.

Warnings

For your safety, this product should be used in accordance with these instructions, otherwise the protection provided may be impaired.

Disposal of Waste Electrical and Electronic Equipment (WEEE)



Do not dispose of this product with household waste

- For the proper treatment, recovery and recycling please take this product to an appropriate collection point.
- If you are unsure where this is, contact your Local Authority
- By disposing of this product correctly you will be providing positive help to the environment.

Warranty, repairs and spare parts

The Light Gate is guaranteed for a period of one year from the date of delivery to the customer. This warranty does not apply to defects resulting from the action of a user such as misuse, improper wiring, any operations outside of its specification, improper maintenance or repair, or unauthorized modification.

Our liability is limited to repair or replacement of the product. Any failure during the warranty period should be referred to Customer Services.

Please contact Customer Services or techsupport@philipharris.co.uk for advice.

Supplier details

Philip Harris Education, 2 Gregory Street, Hyde, Cheshire SK14 4RH

Orders and Information Tel: 0845 120 4521

Fax: 0800 138 8881

Repairs

Tel: 0845 120 3211

E-mail: techsupport@philipharris.co.uk

Website: www.philipharris.co.uk

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