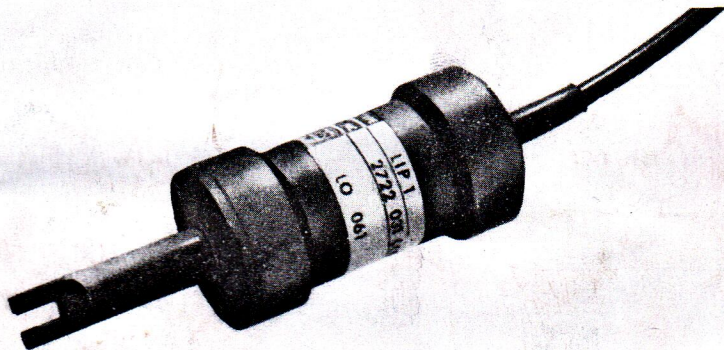


*als gegeven van Philips in de lichtbundel
 over een afstand van ~ 15 µm te moduleren
 , doch output is niet lineair*

LIGHT INTERRUPTION PROBE



3328

APPLICATIONS

The Light Interruption Probe can be used to detect the presence or passage of small objects. Major applications are envisaged in the field of machine tool control (accurate positioning and revolution counting).

DESCRIPTION

The unit houses a novel optical system, a lamp, a photo element, and an emitter follower output stage.

The light coming from the lamp is guided through an optical glass rod. The end of this glass rod at the probe side has been cut and polished at an angle of 45° to the axis of the rod. This provides a combination of a converging lens and prism, forming a focal line in the centre of the gap at the end of the probe. By means of a similar optical system the light that has passed the gap is guided to the photo element in the cylindrical housing.

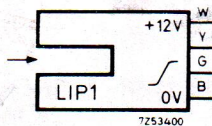
→ de evt getande schijf welke de lichtbundel telken onderbreukt moet zeer dun zijn

The photo element has a low resistance when illuminated, thereby draining the base current to the emitter follower.

As a consequence the output of the unit will be a 'low' voltage. On the other hand if the light emerging from the lamp-side rod is intercepted the output of the unit will be a 'high' voltage.

As only a small object is necessary to intercept the light at the location of the focal line a high resolution is obtained. Though the unit essentially behaves in an analogue way only data pertaining to digital applications will be given.

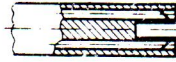
dit wordt in komende publicatie weggelaten.
 Electrical connections are made by means of a 4-core colour-coded shielded cable with a length of 2 m.



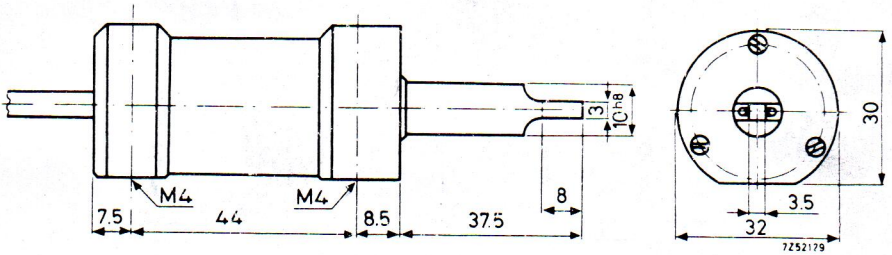
Drawing symbol

MECHANICAL DATA

Dimensions in mm



Housing material: brass
Finish: black

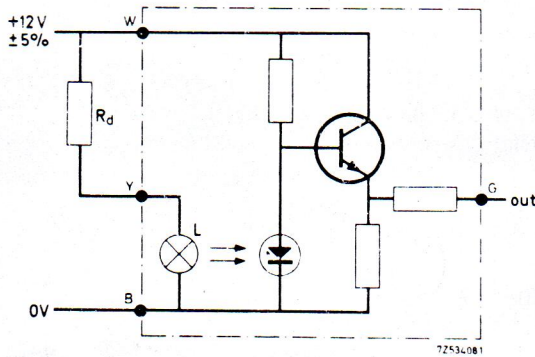


Weight: 170 g (ex cable)

Mounting

The unit can be mounted in any position either by means of two M4 bolts and a supporting bracket, or by entering the probe part into a 10 mm bore cylindrical hole.

CIRCUIT DATA



$R_d = 36 \Omega \pm 2\%$ (cat. no. 2112 100 10538) is supplied with unit.

$L = 6 \text{ V}, 1 \text{ W}$ (cat. no. 9237 246 10181).

Cable shield is connected to probe housing.

Connections

W = white lead, to be connected to +12 V

Y = yellow lead, to be connected via R_d to +12 V

B = brown lead, common 0 V for power supply and load

G = green lead, to be connected to load.

Cable shield to be connected to system shield or to central earth point depending on system lay-out.

Notes

Interconnecting 0 volt and shield arbitrarily may cause difficulties as this introduces the possibility of feeding shield interference pick-up to the 0 volt line.

When the LIP is attached to a machine, which will generally have some earth connection provided for its metal structure, it is recommended that the probe housing and cable shield be properly insulated from the machine to eliminate extra interference pick-up due to capacitive and inductive coupling.

When considering to connect the load terminal to the input of a subsequent unit which is positive with respect to the 0 volt line, make sure that the LIP 1 output voltage is not raised as a result.

TECHNICAL PERFORMANCE

Ambient temperature range

operating

0 to +50 °C

storage

-10 to +70 °C

Power supply voltage (V_S)
current

+12 V_{DC} ± 5%
180 mA

Output, unloaded ¹⁾

max. '0' level (no object)

+1.25 V

min. '0' level (no object)

0 V

min. '1' level (with object)

+4.8 V

max. '1' level (with object)

+ V_S

Output impedance, no object

max. 2.1 kΩ

, complete interception

max. 1.1 kΩ

Output is short circuit proof against 0 volt line

Max. detection frequency

> 10 kHz

Lamp life

> 1000 h (spare lamp is supplied with the unit)

¹⁾ For specification purposes use is made of a glass disc carrying a (chromium) mark and space pattern.

Mark width and space width are each 1 mm.

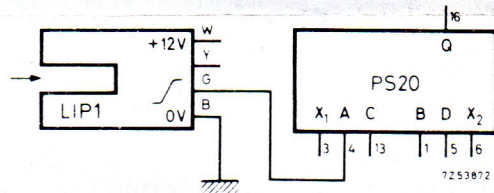
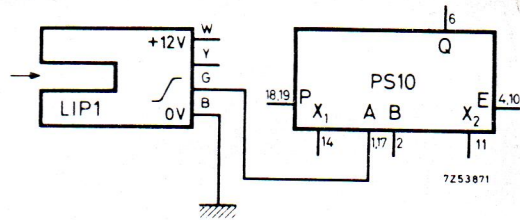
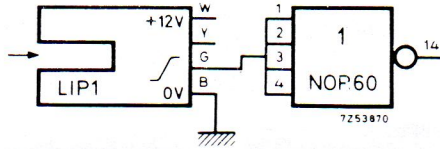
Marks are arranged radially and have a length of 5 mm.

Disc is located in gap so as to bring mark in center of gap.

Actual length of focal line is 2 mm approximately.

APPLICATION INFORMATION

Connecting to circuit blocks



Application Suggestions

Revolution counting
 Angular positioning
 Digital Tachos
 Analogue Tachos
 Weighing

Angular programming

Linear programming