3B SCIENTIFIC® PHYSICS

Digital Input Box   1000571

Instruction sheet

11/15 Hh

1. Safety instructions

- The digital input box must be connected solely to the "Digital Inputs" socket of a 3B NET*log*™ unit.

2. Equipment supplied

1 Digital input box
1 8-pin miniDIN connecting cable, length 600 mm
1 Instruction sheet

3. Description

The digital input box is used for distributing digital input channels A, B, C and D of a 3B NET*log*™ unit to four 8-pin miniDIN input sockets.

It allows for digital output signals from up to four sensor boxes e.g., photo gate 1000563, laser reflection sensor 1001034 to be connected to the 3B NET*log*™ unit at the same time.

It is also possible to perform logical operations using digital inputs A and B via the 3B NET*lab*™ software

4. Technical data

Input signals: TTL level
Output signals: TTL level
Connections: 8-pin miniDIN sockets

5. Operation

- Place the digital input box near the experiment. Example: an air track (e.g., 1019299).
- Position two photo gates (e.g., 1000563) alongside the air track and connect them via their miniDIN cables to the input sockets A and B of the digital input box.
- Connect the digital input box via miniDIN cable to the 3B NET*log*™ unit.
- Configure the two digital inputs A and B to be linked using 3B NET*lab*™ (input mode for "Digital inputs A+B") and evaluate the results from the experimental data.

6. Applications

Measuring the position, velocity and acceleration of moving bodies using multiple photo gates.

7. Sample experiment

Measuring the velocity of a body on an air track

Apparatus needed:

1 3B NET*log*™ @ 230 V	1000540
or	
1 3B NET*log*™ @ 115 V	1000539
1 3B NET*lab*™	1000544
1 Digital input box	1000571
2 Photo gates	1000563
1 Air track	1019299
1 Air flow generator @ 230 V	1000606
or	
1 Air flow generator @115 V	1000605
2 Stand base, 1 kg	1002834
2 Stand rods, 100 mm	1002932
2 Universal clamps	1002830

- Assemble stands by inserting stand rods into two bases and attach the two photo gates to them at the desired positions on the air track (Fig. 1).

Fig. 1: Measuring the velocity of a glider over a given distance on the air track

- On the 3B NET*log*™, select the digital input mode, and in the software of the 3B NET*lab*™ select the experiment template for measuring the velocity of a glider on the air track. The software contains all the necessary instructions for setting up the calculation.
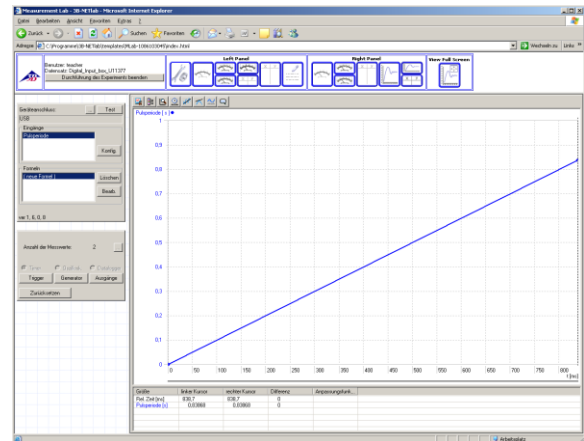- Carry out the experiment and evaluate the result.

Fig. 2: Measurements of the time interval (number of timer pulses) for the rider to travel between two points on the air track