

FiTRO Light Gates

Operating manual

I. CONNECTING THE LIGHT GATES AND INTERFACE WITH THE PC

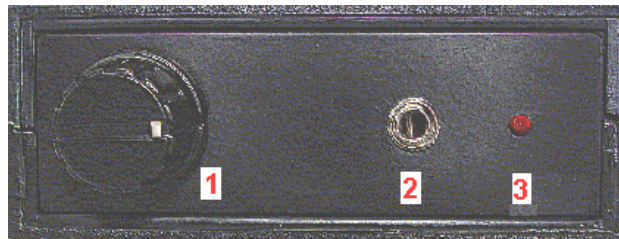
Mount the active modules and reflection plates onto the stands.

Use cable to link the active modules of gates with the interface box. Connect box with the USB port of your PC. Connect the battery and switch on the system.

Place the reflection plates about 2 meters from the active module. Make sure the plate is perpendicular to the infrared beam. In correct position the control LED on an active module will be on.

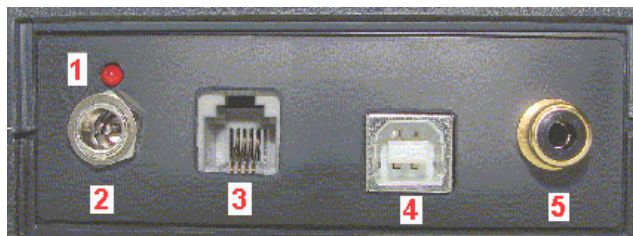
Place additional gate (gates) in desired distance from each other. You will be asked by the program to input this distance (the system will use it for the calculation of velocity).

Interface – front panel



- (1) Knob for regulation of microphone sensitivity
- (2) Microphone socket
- (3) LED diode - light indicates „switching“ level of sound (adjustable by knob 1 – regulation of microphone sensitivity)

Interface – back panel:



- (1) LED diode indicating connection of power supply
- (2) Socket for power supply 12-24V
- (3) Socket RJ11 – connection of photocells
- (4) USB socket – connection of PC
- (5) CYNCH socket – connection of start block contact

Mount the photocells and reflex plates to the stand. Position first pair of stands (photocell and reflex plate) in the same height (no more than 5 m apart). Place another pair (other pairs) to desired distance (distances).

Connect the first photocell with the socket 3 on the rear panel of interface. Connect additional photocell to the previous one (2nd to 1st, 3rd to 2nd, etc.).

Connect PC (with program and drivers installed) to USB socket (4) on the back panel of interface. Connect low voltage cable of an adapter to the socket 2 on the back panel of interface. Correct connection is indicated by active red LED (1) above the socket.

Should you wish to use microphone to start the measurement, connect microphone to the socket 2 on the front panel of interface. Adjust sensitivity of microphone by the potentiometer (1) on the front panel of interface. Reaching a threshold level of sound will be indicated by blinking of red LED (3) on the front panel of interface.

Position photocells and reflecting plates in the same height opposing each other. Activation of red LED at the top of the photocell box indicates correct position. LED is switched off by interruption of the beam between the cell and reflecting plate.

Should you wish to use the switch off contact in the start block, connect this one to the CYNCH socket (5) on the rear panel of interface.

This completes the hardware installation of the system.

II. INSTALLATION A RUNNING THE PROGRAM

Upon connecting the interface to USB port of the PC for the first time Windows operating system recognizes new device (**FiTROgates**) and starts „Guide for installation of the new device“. Guide will ask for installation of the drivers. These are on CD with the program. Should operating system display message that driver is not digitally signed by Microsoft, click on „Continue“. After completing installation system is ready for measurement.

Should you connect interface to another USB port (modern PCs usually have more than one), operating system may ask for a new installation of the drivers.

All FiTRO devices use the same driver. Should you have installed the driver for some of the FiTRO device before, connecting of FiTROgates will not request for redundant installation.

Installer of FiTROgates will be automatically activated once installation CD is inserted.

Another option is running „setup.exe“.

Installation program offers specification of directory, to which program should be installed. Default option is **c:\Program Files\FiTRONiC\FitroGates**

To start the program click on the icon Fitro_Gates on the desktop or alternatively through Start/programs/FiTRONiC/FiTRO_Gates (double click on the icon).

III. RUNNING THE PROGRAM

Starting the program opens the main menu with the horizontal toolbar.



One can use the program routines (with the exception of Measurement) without connection of the photocells.

1. FILE

1.1. OPEN

Loads the data from previous measurement in Split times tests a Shuttle run tests.

1.2. OPEN Players data

Loads the data from previous measurement in Players tests.

1.2. SAVE

Stores data in memory. Should you use the name already on the disk, the system shows warning (OVERWRITE? YES/NO).

1.3. Print

Prints digital and/or graphical data.

1.4. Print Setup

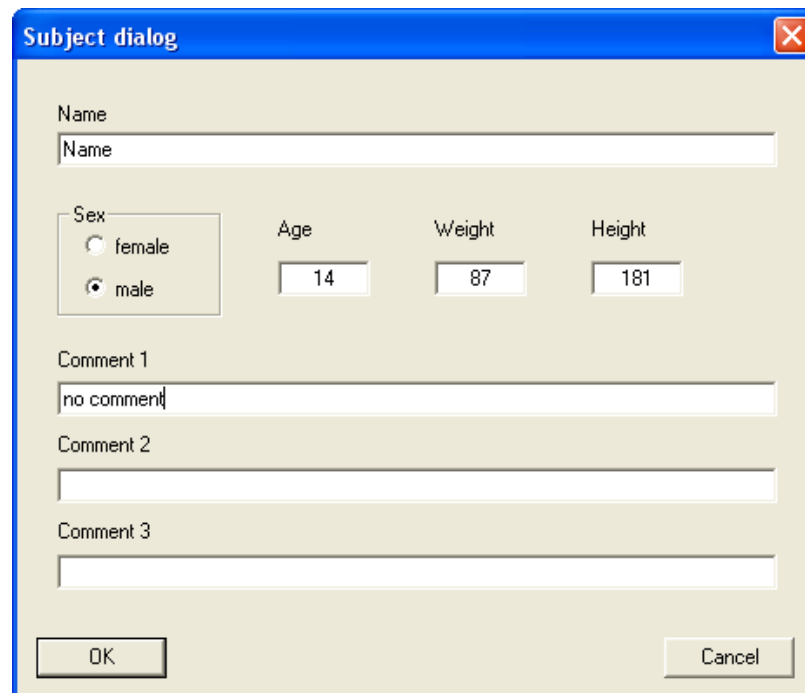
Sets up the printer.

1.5. EXIT

Closes the program.

2. SUBJECT INFORMATION

Put in the optional information on the subjects and comments.



The image shows a 'Subject dialog' window with a blue title bar and a close button (X) in the top right corner. The window contains the following fields and controls:

- Name:** A text input field containing the text 'Name'.
- Sex:** A group box containing two radio buttons: 'female' (unselected) and 'male' (selected).
- Age:** A text input field containing the value '14'.
- Weight:** A text input field containing the value '87'.
- Height:** A text input field containing the value '181'.
- Comment 1:** A text input field containing the text 'no comment'.
- Comment 2:** An empty text input field.
- Comment 3:** An empty text input field.
- Buttons:** 'OK' and 'Cancel' buttons at the bottom of the dialog.

Information will be stored in a file together with data from measurement.

Subject information and comments can be added also later, either after the measurement or after loading data for processing in report routine. Saving under the same name adds these new data into the old file.

3. Measurement

3.1 Split Times Tests

The cells (minimum 2) should be in one line. System is unable to identify, which cell has been intermitted. Make sure that no other individuals are moving within detecting fields of the cells. At first, one has to specify the impulse to start the time keeping.

1. **Microphone - Photocell No1**: time keeping starts with the sound received by the microphone
2. **Photocell No I**: time keeping starts with the intersecting 1st cell
3. **Start block - Photocell No1**: time keeping starts with the releasing of the the contact in start block (not a part of the system). Optionally one can use contact mattress, which comes with other FiTRNiC systems, e.g. FiTRO Jumper, FITRO Agility Check. First value reflects split time „block to 1st gate“. This is followed by split times between cell.
4. **Microphone - Start block - Photocell No1**: time keeping starts with the sound received by the microphone. Next split time reflects reaction time (sound to release from the block or mattress). Subsequently split time „start block to 1st gate“ is recorded, followed by split times between cell.

The screenshot shows a dialog box titled "Split options" with a close button (X) in the top right corner. The "Start configuration:" dropdown menu is set to "Microphone Photocell No1". Below this, under the heading "Split distances (m)", there are six input fields. The first field, "Start position - Photocell No I", contains the value "10". The remaining five fields, representing distances between photocells (No I to No II, No II to No III, No III to No IV, No IV to No V, and No V to No VI), all contain the value "0". At the bottom of the dialog, there is a text label "Click OK to activate system" and two buttons: "OK" and "Cancel".

According to start option selected, one has to fill in distances between particular cells and distance between start position and photocell I, in order the program can calculate velocities (split and elapsed) in particular segments. Should you select option 2. (start upon

interseccion of photocell 1) distance „Start position – Photocell No I“ cannot be filled in (window is blocked).

Click on OK activates the system (should you select the option with start blocks, the subject tested has to take the starting position first!).

Monitor shows, in addition to the name and comment (provided these data were put in „subject info“ routine), date and time and table frame with split and elapsed times, distances and velocities to be displayed on line for each particular segment during the test:

Split distance (m)

Split time (s)

Split speed (m/s)

Elapsed distance (m)

Elapsed time (s)

Elapsed speed (m/s)

Name: Comment: Date: 04.12.2006 at 11:13:09							
	SPLIT DISTANCE (m)	SPLIT TIME (s)	SPLIT SPEED (m/s)	ELAPSED DISTANCE (m)	ELAPSED TIME (s)	ELAPSED SPEED (m/s)	
Start - Photocell I	5	0.647	7.73	5	0.647	7.73	
Photocell I - Photocell II	5	0.855	5.85	10	1.502	6.66	

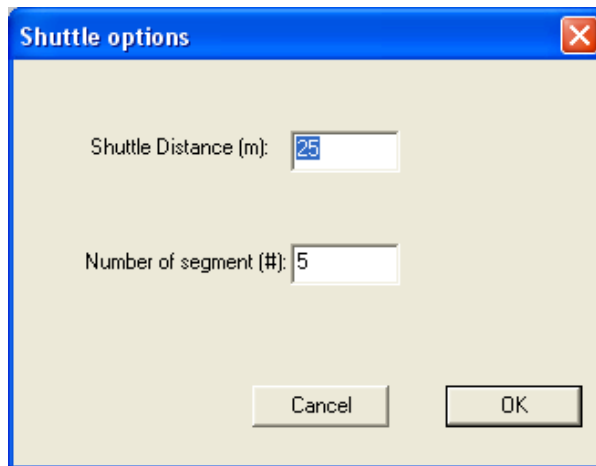
Data aquired can be subsequently displayed and processed in **Report** (see appropriate section of the manual). Prior proceeding to subsequent test, data must be stored. Ignoring warning message leads to loss of the data.

3.2. Shuttle Run Tests

This option enables to keep times between two cells regardless of the direction of the run. In dialogue window one has to specify distance between cells and number of shuttle runs.

Click on OK activates the system. Monitor shows the same parameter as in the Split time test for each segment.

Data aquired can be subsequently displayed and processed in **Report** (see appropriate section of the manual). Prior proceeding to subsequent test, data must be stored. Ignoring warning message leads to loss of the data.



Shuttle options

Shuttle Distance (m): 25

Number of segment (#): 5

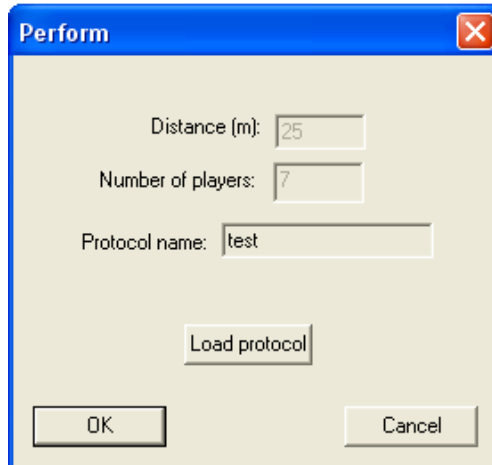
Cancel OK

3.3. Players Tests

This routine is used to measure one split time (between two cells) in several subjects running one after another.

Option allows to create a protocol (see „Create protocol“). This can be saved for future use.

Activation of this routine opens a dialogue window (Perform), which shows basic parameter of protocol created. Alternatively, previously created protocols can be used („Load protocol“).



Perform

Distance (m): 25

Number of players: 7

Protocol name: test


Load protocol

OK Cancel

Click on OK activates the system. Monitor shows, in addition to date and time a table frame with distance, time and velocity of subjects tested. Each line contains the name and data of one subject. In order to avoid confusion, subjects have to run in the same sequences as specify in protocol (list of subjects).

Data aquired can be subsequently displayed and processed in **Report** (see appropriate section of the manual). Prior proceeding to subsequent test, data must be stored. Ignoring warning message leads to loss of the data.

4. REPORT

To use this routine, you need data in memory, either from actual measurement or loaded from previous one. Presence of data in memory is indicated by automatic activation of report icons, e.g.  on the horizontal tool bar under the main menu.

4.1. Digital report

Displays measured and calculated parameters of the test, name of the subjects, date and time of measurement and comment (provided they have been put in in „Subject info“ routine).

Split distance (m)

Split time (s)

Split speed (m/s)

Elapsed distance (m)

Elapsed time (s)

Elapsed speed (m/s)

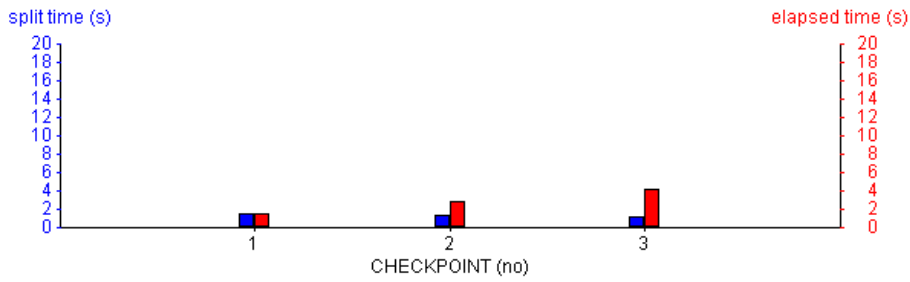
Export CSV							
Name: Jan Comment: no comment Date: 26.05.2004 at 08:06:03							
	SPLIT DISTANCE (m)	SPLIT TIME (s)	SPLIT SPEED (m/s)	ELAPSED DISTANCE (m)	ELAPSED TIME (s)	ELAPSED SPEED (m/s)	
Start - Photocell I	5	1.563	3.20	5	1.563	3.20	
Photocell I - Photocell II	5	1.409	3.55	10	2.972	3.36	
Photocell II - Photocell III	5	1.276	3.92	15	4.248	3.53	

Click on **Export CSV** allows to export and save data in a file with extension .csv. This is a text file with data separated by commas. Data can be loaded and processed in MS Excel or similar programs.

Click on **Print** send data to a printer..

4.2. Graph report

Name: Jan
 Comment: no comment
 Date: 26.05.2004 at 08:06:03



	SPLIT DISTANCE (m)	SPLIT TIME (s)	SPLIT SPEED (m/s)	ELAPSED DISTANCE (m)	ELAPSED TIME (s)	ELAPSED SPEED (m/s)
Start - Photocell I	5	1.563	3.20	5	1.563	3.20
Photocell I - Photocell II	5	1.409	3.55	10	2.972	3.36
Photocell II - Photocell III	5	1.276	3.92	15	4.248	3.53

Displays measured and caculated data in digital and graphical form as well as name of the subjects, date and time of measurement and comment (provided they have been put in in „Subject info“ routine).

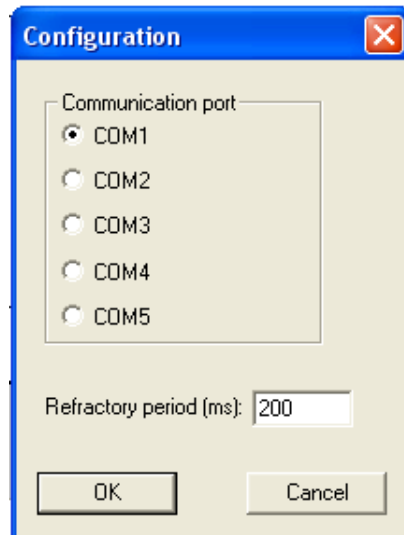
On X-axis graph displays time or velocity (depends on the specification in „Setup graph“). Y1 and Y2 axes depict one of 3 parameters, i.e. split time, elapsed time or velocity. In lower part of the screen there is corresponding sequence of digital report.

Click on **Print** send data to a printer.

5.1. Setup

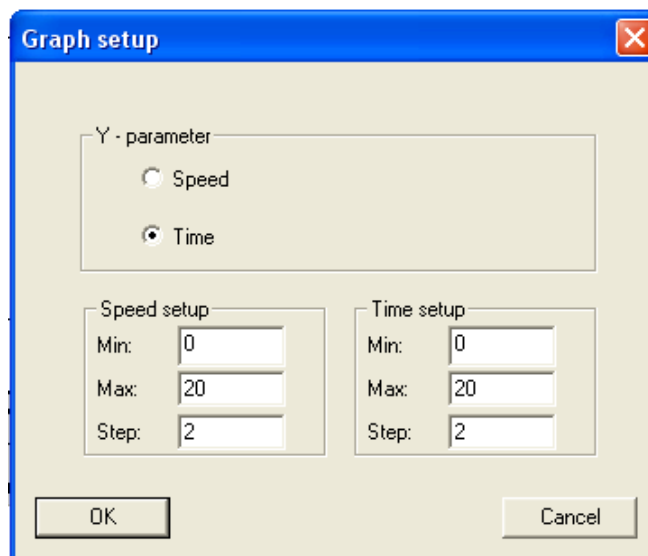
Enables to specity serial port (RS232), to which the unit is connected (older versions). If you are using more recent USB connection, this specification will not be taken in account.

In lower window, the refractory period can be specified. Refractory period is a time in ms after the moment of activation, for which the cell will be inactive. It serves as a filter, which ignores any subsequent impuls after intermission of the cell.



Parameters will be stored in a configuration file, i.e. remain active also after future start of the program.

5.2. Graph setup



Set the parameter for X-axis and scaling as required in windows.

5.3. Create protocol

Specifies the test distance a subjects for Players Test.

Protocol setup

Protocol name: test

Distance (m): 25

Name of player: Jacek

No.	Name
1	John
2	Peter
3	Karol
4	Sandor

Add Insert

Change

Delete

OK Save Cancel

First window requires protocol name. Use short and characteristic description (will be displayed once test is activated), e.g. name of the group tested. In window below, specify distance between two cells.

In window „Name of player“ put the name of the subject you intend to include into group. The subject can be added to the end of the list (**Add**), inserted above the name of one highlighted by click of the left mouse button (**Insert**). Alternatively this name can also replace the subject highlighted by click of the left mouse button (**Change**). Any name can be deleted by highlighting with the click of the left mouse button and click on **Delete**.

Protocol (its name, distance and list of the subjects to be tested) can be stored (click on **Save**).

5.4 Edit protocol

Load protocol you wish to edit. In window „Name of player“ put the name of the player you intend to include into group to be tested. This subject can be added to the end of the list (**Add**), inserted above the subject highlighted by click of the left mouse button (**Insert**). Alternatively, this name can also replace the subject highlighted by click of the left mouse button (**Change**). Any name can be deleted by highlighting with the click of the left mouse button and click on **Delete**

Click on **Save** stores protocol. If you wish to keep the source protocol, use a different name to store a new one.

5.5. Open protocol

Opens protocol (name, distance and list of the subjects to be tested) for Players Test.

5.5. Save protocol

Store protocol (see parts 5.3. and 5.4., respectively)

6. ABOUT

Specifies version and copyright of the program:



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