

## STM2A

Slot Track Monitor, version 2A

### Operation Manual

STM2A device is designed to work as an interface for the SpyTech Race Manager software ([www.spytech.cz](http://www.spytech.cz)). All functions are remotely controlled through PC serial port.

STM2A is capable of measuring the race times for up to eight tracks with millisecond accuracy. A build-in switch starts the race synchronously with the race clock at a command from the controller PC.

#### Package contents

- STM2A device,
- supply adapter,
- serial cable for connection with master PC,
- 2,1mm switch connector, Cannon Sub-D 15 pin connector with housing,
- LED ( $I_a = 10\text{mA}$ ) for external state signalization.

#### Sensors

Slot track monitor uses sensors built into the track for cars detection.

**Contact sensors** consist of insulated sections of the track, connected as shown in fig. 1. Insulation should be longer than ordinary slot cars brushes length.

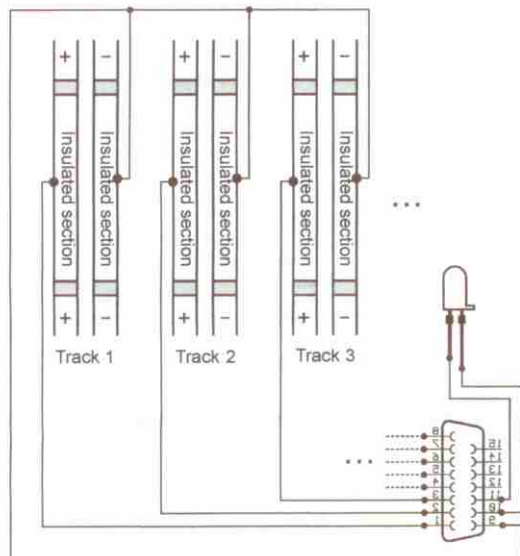


Figure 1: Insulated sections.

**Optical sensors** work as photoelectric barriers. For recommended wiring see figure 2a. Light source used must ensure sufficient excitation of receiver phototransistors, light current value must be at least  $45\mu\text{A}$ . For a better function, two receiving elements can be connected in parallel for each track – see fig. 2b.

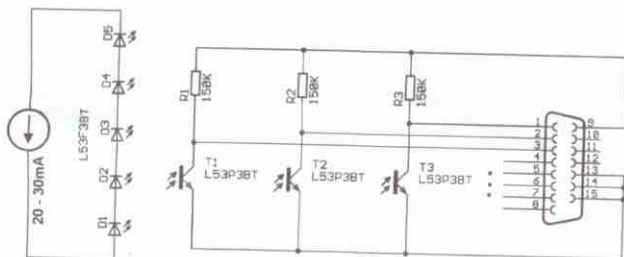


Figure 2a: Optical sensors.

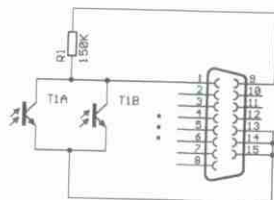


Figure 2b: Two phototransistors connected in parallel.

#### Device inputs

- Threshold voltages: 0 to 2.5V OFF, 3.5 to 24V ON.
- Maximum continuous voltage:  $\pm 24\text{V}$ .
- Shortest detectable impulse duration: 0.5ms;  
when using optical sensors connected according to fig. 2: 1.3ms.

#### Switch

The build-in switch can be controlled from the main program running on the PC. Maximum switched voltage: 45V DC, maximum switched current: 0,5A. Switch activation is indicated by green LED light.

#### Power supply

Power supply input is rated 15V / 60mA. Use only the adapter supplied with the device. Unplug it from the mains when device is not in use.

## State indication

Device state is indicated by two light emitting diodes.

**Green light** signals the switch is in on-state.

### Red light

- Shines for several seconds after power-on.
- Flashes slowly (1x / 4s) when device is in ready state.
- Flashes quickly (3x / 1s) when lap time measurement is active.
- Shines continuously when sensors are hit.

For external state signalization connect the supplied LED as shown in figure 1.