



## Air rail with analog and digital multimeter, flow unit and 5 photoelectric sensors

SCN-F002K3JM

### Function

Intended for experimental study, physics laboratory and carrying out physics experiments on: Physics. Kinematics. Reference, position, movement and trajectory. What is meant by mobile. The trajectory and displacement. The difference between displacement and distance travelled. The Cartesian frame of reference in the plane, orthogonal Cartesian plane. The quadrants. The coordinates of any point on the plane that contains the orthogonal Cartesian system. Differences between scalar magnitude and vector magnitude. The straight and uniform movement, MRU, air rail. The  $S$  versus  $t$  table and graph. Determining the average speed. Determining the MRU hourly equation. Checking the characteristics of the MRU. Uniformly varied rectilinear motion, MRUV, air rail. Constructing the  $S$  versus  $t$  table and graph. The trend line of the points on the graph, presented by the spreadsheet. The function that informs how the quantity  $S$  behaves in relation to  $t$  in the MRUV. The  $S$  versus  $t$  graph and the slope of the graph tangent. Calculating, tabulating and constructing the  $v$  versus  $t$  graph of an MRUV. The Torricelli equation, time-independent equation for MRUV. Dynamics. The fundamental law of dynamics, Newton second law. The relationship between acceleration and force. Energy Conservation. Coefficient of restitution, momentum and kinetic energy in an inelastic collision. Data acquisition, before and after the inelastic collision. Acquisition of data from car 1, before the collision, sensor  $S_0$ . What is meant by system. Mechanical collisions, momentum and kinetic energy. The coefficient of restitution between two colliding bodies. The amount of movement before and after an

inelastic collision. The kinetic energy before and after the inelastic collision. Coefficient of restitution, momentum and kinetic energy in an elastic collision. Data acquisition, before and after elastic collision. The amount of motion before and after a perfectly elastic collision. The kinetic energy before and after the perfectly elastic collision. Wave. Determination of the elastic constant of a mass and spring system, MHS. Measuring periods and calculating the average value. Determining the elasticity constant of the spring by the dynamic process, etc.

## **Knowledge areas**

Physics - Compact Kits

## **Key Experiments**

The movement and the trajectory.

[cidepedigital.com.br](http://cidepedigital.com.br) ✉ [cidepe@cidepe.com.br](mailto:cidepe@cidepe.com.br)

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Av. Victor Barreto, 592 - CEP 92010-000 - Canoas - RS - Brasil