**RFQ049 Appendix B3 Lot 3 Physics**

Please see below the specifications for the following

* **Planetarium Light display**
* **Air Track**
* **Air track blower**
* **Pico Ammeter**
* **Hydroelectric Power Plant**
* **Microwave monitor**
* **Vibration generator**
* **Square Chladni Plate**
* **Round Chladni Plate**
* **Lascells dynamo**
* **LoVolt Power supply**
* **Sound level meter**
* **Assorted spectrum tubes**
* **Spectrum tube power supply**

**Planetarium Light display**

Home Planetarium Homestar Pro / Star Theatre

Requirements

* 2 Realistic discs of northern hemisphere with and without constellations
* 1 Double sided poster (skymap) of northern and southern hemisphere 44 x 64 cm
* 1 Manual
* 1 UK 3 pin Mains Adapter
* 4 additional realistic high-res discs available: Southern Hemisphere, Warped Andromeda, Day Earth and Moon, Night Earth and Moon

Technical Requirements

* 60,000 stars
* Ultra-bright 3-watt white LED technology
* Projector: 16.7 x 15.9 x 15.1 cm, 800 g
* Projection screen: ceiling, wall or other plane white surface
* Projection distance: 150-230cm
* Projection area: circle with 270 cm in diameter
* Dimensions 16.7 x 15.9 x 15.1 cm

**Air Track**

 Linear Air Track Kit (with Accessories)

* B8H25339
* The kit includes the Air Track plus the following accessories:
* Track: right triangular section aluminum 60 x 60 x 80mm, overall length 2m
* Nominal height of centre line above bench: 120mm
* Vehicles: two 400g, 250mm x 50 x 5.5mm; one 200g, 230mm x 50 x 2.5mm, their masses are in the ratio 2:1
* Three spring buffers for attachment to the track ends or to vehicles for elastic collisions
* Three ‘horns’ used with rubber bands for elastic collisions
* Ten spare rubber bands
* Two Magnadur magnets and two counterweights
* A pair of Velcro® buffers for inelastic collisions
* Three black interrupter cards to fit the vehicles for use in timing

**Air Track Blower**

As standard

* To fit above criteria of Air Track.

**Pico Ammeter**

* Dimensions: Width: 175mm.
* Depth: 190mm (including cable clips: 206mm).
* Height: 298mm.
* Mass: 2.7kg.
* • Input voltage up to 5kV
* • BNC socket for shielded lead
* • Auto-zero facility

**Hydroelectric Power Plant**

* Pelton turbine
* transparent housing windows
* 6V 3W generator
* electric motor with propellor and a bulb on a plug in element.
* circuit diagram plastic base and 4mm outlet sockets for AC and DC voltage.
* Includes tubes for water inlet and outlet (1m each) and an instruction manual
* Required to work with both loads connected from 1.5 bar water pressure and with 4 bar water pressure, the maximum 3W are generated.

**Microwave monitor**

* checking general public exposure levels against best practice standards in the vicinity of mobile phone base-station masts, mobile phones, cordless DECT phones, wireless networks, baby monitors, microwave ovens, and all other microwave frequency sources operating between 50MHz and 3000 MHz (3GHz).
* Experiment with a wide range of emission sources
* Make a field trip to your local phone mast
* Discuss topical health issues related to overexposure to wireless radiation
* An array of 10 LED lights shows measurements from 0.7 to 6.5 Volts per metre (V/m), and they are further grouped into bands of green, yellow and red, representing the precautionary levels set in some European countries.
* The Environmental Microwave Monitor has been calibration-tested at DERA's EMTF Electromagnetic Test Laboratory. Uses a standard 9V battery, included.
* Supplied with a teacher's guide with detailed guidance on experiment-related issues

**Vibration Generator**

* A generator for producing mechanical vibrations when used with a signal generator.
* The input is fed to a coil, which is mounted within the field of a cylindrical permanent magnet.
* The unit is electrically secured by means of a fuse.
* Dimensions: 100 x 100 x 120mm

**Square Chladni Plate**

* Metal plate for generating acoustically excited figures in media such as fine dry sand as in the experiment by Chladni
* To be used in conjunction with vibration generator
* Comes with 4-mm plug for mounting to vibration generator
* Base is not included
* Measures 7" length by 7" width

**Round Chladni Plate**

* Metal plate for generating acoustically excited figures in media such as fine dry sand as in the experiment by Chladni
* To be used in conjunction with vibration generator
* Includes 4mm plug screwed into central hole of plate
* Circular chladni plate

**Lascells dynamo**

* A cycle dynamo mounted on a strong acrylic base with rubber rimmed drive wheel.
* The dynamo can power torch bulbs and a bulb and holder is fitted to the base to provide a compact and self-contained unit for demonstrating mechanical to electrical to light energy transfers.
* Dimensions: 200 x 120 x 120mm (W x D x H)
* Lamp: 6V MES with holder

**LoVolt Power supply**

* General purpose power supply
* Switched output voltage
* Up to 14V AC or DC at currents up to 5A
* Overload protected

Voltage 2, 4, 6, 9, 12 or 14V AC or unsmoothed DC at 4A continuously, or up to 5A for periods of 1 hour. Voltages are selected by means of a rotating switch on the front panel. In any incidence of overload, including direct short, a current sensing circuit breaker mounted on the front panel will operate and disconnect the output voltage. Outputs are taken from colour coded 4mm sockets mounted on the front panel. An illuminated on/off switch is mounted on the rear panel adjacent to a fused appliance inlet. Housed in a robust metal case with a durable powder coated finish.
Supplied with mains lead and instructions.

**Sound level meter**

* A multifunction digital meter with an electret condenser microphone for giving virtually instant readings updated every 0.5 seconds on an extra large clear hi-contrast LCD display.
* All function buttons are soft touch non-slip rubber.
* A & C frequency weighting and 4 measuring ranges, 40-70dB, 60-90dB, 80-110dB, 100-130dB.
* Supplied with battery and instructions for use

**Assorted spectrum tubes**

* To show spectral lines of pure substances.
* glass tubes approximately 260mm long, central capillary portion approximately 90-100mm long with electrodes sealed at both ends and connected to lead wires protected by metal caps.
* Requires our Spectrum Tube Power Supply unit (XOP 998 0110) or an induction coil 50mm spark.
* Length of capillary portion can be varied as required.
* These cannot be used as lamps. For intermittent use only

**Type of tubes required**

* Air
* Argon
* Carbon Dioxide
* Helium
* Hydrogen
* Iodine
* Krypton
* Mercury
* Neon
* Nitrogen
* Oxygen
* Water Vapour
* Xenon
* Bromine
* Deuterium

**Spectrum tube power supply**

* Specially designed, economy power supply safely runs spectrum discharge tubes of approximately 260mm length.
* Encased in a metal body.
* Spring loaded with clips to connect the tubes securely.
* Dual voltage capability (110V / 220V) by the flip of a switch! RoHs and CE Certified. With UK adapter plug.