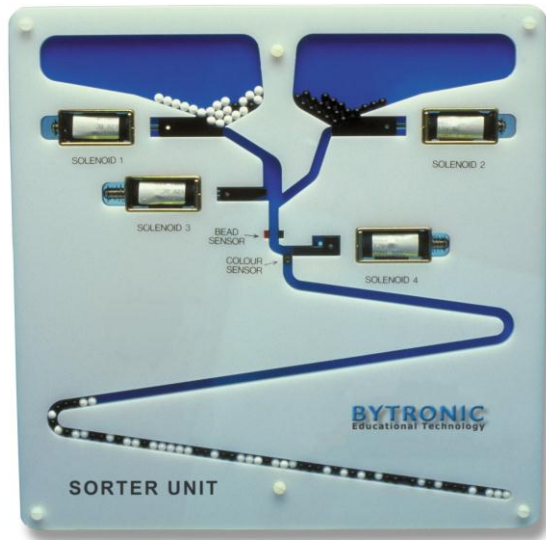


**Sorter Unit SRU****Key Features:**

- Sorts and counts components
- Uses opto-electronic devices
- Control of linear actuators
- Bead pattern creation
- Bead sorting
- Clear front give a visual understanding of the operation
- Quick and easy set-up
- Control from PC or Microcontroller

The Sorter Unit (SRU) is designed to be used as a control application from PC or microcontroller. The SRU includes the use of opto-electronic sensors for counting and sorting and control of linear solenoid actuators.

The SR is a two dimensional bead sorting and counting system that has two distinct functions. It is a three-layer sandwich construction, which encapsulates fifty white beads, and fifty black beads, which are free to move around a pattern of hoppers with tracks cut into the middle layer.

**Bead Pattern Creation:** The unit has two hoppers to store two different coloured beads. Two linear electrical solenoids are used to open and close gates at the outlets of the hoppers. If either solenoid is briefly de-energised, a bead of the appropriate colour is released from the hopper and rolls down the zigzag track that has a number of possible bead patterns in the track. Feedback from an infrared through-beam sensor is used to ascertain if a bead has been successfully dispensed each time.

**Bead Sorting:** When both hoppers are empty and the required bead pattern has been achieved the unit may be turned upside down to allow the beads to be sorted back into their respective hoppers. A second pair of solenoids are used to deflect each coloured bead into a hopper and an infrared reflective sensor is used to determine the colour of each bead.

The sensor's output sends a binary signal to the computer to signify black or white depending upon how much of the infrared beam is reflected from the bead. An audible indicator on the SRU is used to indicate 'end of sequence' or that an error has occurred.

A PC fitted with a suitable internal interface card can be used to connect to the SRU through the IDC header and Programming software used to write a control programs for the Unit. A microprocessor can also be used for control.

**Curriculum Coverage**

- Introduction
- Getting started
- Assembly
- Interfacing
- Power supply requirements
- Configuring the I/O port
- Understanding the sorter unit
- Solenoids
- The bead sensor
- The Colour Sensor
- The buzzer
- Monostable multi-vibrators

**Labworks**

- Producing a program for control of the sorter unit
- The bead sensor
- The buzzer
- A program to generate a bead sequence
- A program to sort the beads out

## Specification

Outputs	2 x digital outputs 1 x infra-red reflective sensor 1 x infra-red through-beam sensor
Inputs	6 x digital inputs 4 x linear solenoids Switch selectable audible indicator
Sensor	1 x infra-red reflective sensor; 1 x infra-red through-beam sensor
Actuators	4 x linear solenoids
Components	50 x Black beads 50 x White beads
Construction	Clear acrylic front cover with three layer acrylic frame and detachable acrylic support leg
Connectors	20-way IDC header 2 x 4mm power sockets
Power supply required	12V d.c. @ 1Amp

## Required

A suitable PC with minimum; Pentium processor, 1GB RAM, 20GB HDD, CDROM Drive, and Windows XP or above

## Ordering Information

<b>Model Number:</b>	<b>SRU</b>
<i>Consists of:</i>	1 x Sort unit 1 x 12V d.c. power supply unit 1 x Manual 1 x Software CD 1 x 2.5mm – 4mm adaptor lead

## Weights and Dimensions

<b>Un-Packed</b>		<b>Packed</b>	
Approximate Dimensions (mm)	295W x 295D x 240H	Approximate Dimensions (mm)	350W x 100D x 350H
Approximate Weights	1.6Kg	Approximate Weights	5Kg

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