



## *Description*

The R12-six is a complete self-contained six axis vertically articulated robot arm system designed as a cost effective solution for bench top automation. Applications include testing, sample handling, machine feeding. The hand terminates in a mounting plate for grippers, vacuum cups etc.

R12-six is a very low cost entry to robotics, fast, accurate and reliable and easy to program yet capable of the most complex tasks. It has a useful 500mm reach. R12-six is a technological breakthrough in bench top robotics. Based on the R12-500 it is a 6 axis articulated robot arm with a 500mm reach. It employs new light weight, high efficiency digital motors driving through steel reinforced polyurethane timing belts for the first 5 axes.

The 6th axis is a unique way to make 6 axes optional, being an add-on module with a miniature stepping motor driving through a Swiss anti-backlash gearbox. Incremental optical encoders are optional on the first 5 axes providing exceptional integrity (see below).

Do not let the low cost mislead you - this is not a hobby robot. It is a professional tool made to industrial standards of quality, reliability and performance, machined from solid alloy and finished with aesthetic acrylic covers. The system is supplied complete with controller, all cables, connectors, software, comprehensive manuals, ready to unpack and use immediately.

The **K11 robot controller** uses a partnership of MPU and DSP processors and compact high voltage micro-stepping drives providing both speed and precise control and is provided with a simple intuitive teach pad. The controller can also interface with or even control other equipment at the same time as the robot. Software is **ROBOFORTH II** which makes this robot really easy to get started with yet capable of the most complex tasks, assisted by RobWin project manager which brings everything together on one Windows screen.

## Specifications

Drives:	High power micro-stepped hybrid stepping motors, optional encoder watchdogs
Reach:	500mm/20ins in any direction; 360 degree waist rotation
Repeatability:	0.2mm (see note)
Payload:	nominal 400g, max 800g (2lbs) at flange (repeatability and speed degrade with increasing payload and reach).
Compliance: droop at 250mm at nominal payload:	0.4mm
droop at max reach with max payload:	2.3mm
Maximum speed:	Shoulder 180 deg/sec, Elbow 270deg/sec, Waist 180 deg/sec.
Standard cycle time:	2 secs.
Max torque for hand pitch or yaw:	2 Nm (repeatability figures degrade).
Max torque for 6th axis roll:	0.25 Nm (repeatability figures degrade).
Weight	Robot 13.0Kg/29lbs Controller 11kg/25lbs
Power:	110/240v ac 420VA (standard controller)
Temperature range:	0 - 30C (wider range optional)
MTBF:	10,000 hours
Safety:	Class 2 stop circuit, stall detect, risk assessment guide. High intensity LEDs along the arm serve as awareness barrier.
Noise:	Approx 40-50dB at 1m.