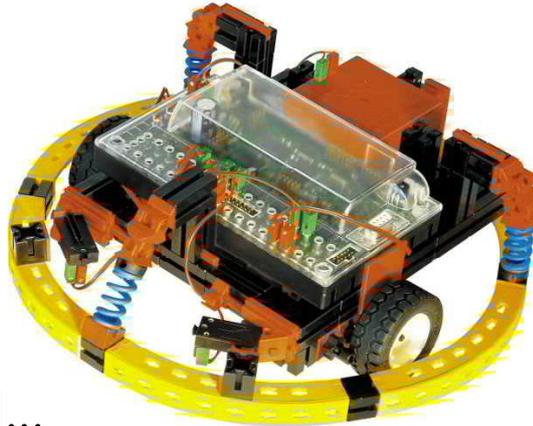


NEWSLETTER

1st issue 2005 edition

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Mobile Mad...

...ness! The new ROBO Mobile Set (93292) builds 8 models and has over 450 parts including 2 power motors, 4 micro-switches, 2 photo-transistors, 1 lamp, numerous building blocks, ROBO interface (93293) and ROBOPro programming software (93296).

The 93292 kit starts you building simple moving models and progresses to models that can sense obstacles that it bumps into (see above) or detects the edge of a table or can sense lights and follow a path drawn on the floor. Finally, a 6 legged walking robot can be constructed with this kit.

A 50 page full-colour construction manual together with an 168 page activities manual in 6 languages are contained in the kit. The activities manual provides basic information on robots and the various components, in addition to exercises for all 8 models.

The only extra thing you need to get started with the 93292 kit is the ACC Set (34969) containing a rechargeable battery pack and charger. Optional items include; the 30344 IR Control Set (remote control unit) and 93295 RF Data Link (radio link to the PC or another ROBO interface) and storage containers.

Also available is the 96808 kit with assembly parts only without interface and software. Teachers, please

ask us about a classroom package deal.

On the Net

Check out our website for more information and pricing on the new kits. In addition we have added a whole new range of products and equipment that you're sure to find useful. Just go to:

www.procontechology.com.au

Don't forget to also check out our 'Maths tricks and tips' page.

I/O, I/O it's...

...off to work we go! Running out of inputs and outputs? Fear not, the new interface can be expanded to 32 inputs, 32 outputs and 7 analogue inputs. Read on...

The new ROBO interface unit (93293) is a quantum leap forward in design. It provides all of the inputs and outputs on the 30402 interface with 8 digital inputs, 2 analogue resistive inputs and 4 motor outputs - but also provides 2 voltage inputs (0-10V), 2 distance sensor inputs and an Infra-Red transmitter input for testing and controlling models using the fischertechnik remote control unit. All motor outputs are now speed controlled in 8 steps and

also allow you to use them as 8 digital outputs for lamps, buzzers and electromagnets etc.

The ROBO interface unit (93293) is expandable to 32 digital inputs, 5 resistive inputs and 16 motor outputs (or 32 digital outputs) using up to 3 fischertechnik i/o expansion modules (93294). The expansion module also provides a low-cost way of controlling your models direct from the PC through the USB port!

These 'mind blowing' features are not all there is! The interface provides either direct connection using the standard fischertechnik plugs or 'quick connection' by a 26 way IDC socket. This time-saving feature allows models to be set-up with ribbon cable and IDC connectors and just plugged into the interface when required. You also have the option of communicating with this interface through the serial port on your PC or through the USB port - or through BOTH if you'd like to share the interface between two computers!

Available now is the 2.4GHz Radio Data Link (93295) which allows cable-free computer control of 8 interfaces and wireless communications between two interface units.

For the technically minded the interface contains a 16 bit M30245 microprocessor running at 16MHz, has 128KB of RAM and 128KB of flash memory. Three programs can be stored in memory, 1 in RAM and 2 in flash memory. i.e. your programs are no longer lost when powered down! The USB interface operates at 12M bits/sec and the serial port at 38400 baud - four times faster than the old interface!

The new interface comes with

both USB and serial port cables and can be programmed in ROBOPro (see next) or compiled C (to be released soon). Power is supplied by a rechargeable battery pack or AC mains adapter.

ROBOPro...

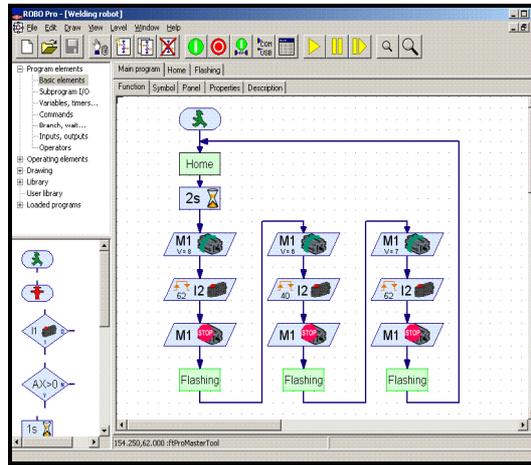
...Software is a graphical based language which provides a flowchart style of programming (see picture above). Thirty-one decision and action blocks form the basic functions of the ROBOPro language, with another twenty functions for variable and i/o control. Those who have used LLWIN (the old software) will notice the significant improvement in execution speed and enhanced subprogram operation, including parameter passing and recursive control - using recursion the Hanoi Towers puzzle is easy to solve and comes as an example.

One of the most significant enhancements with the ROBOPro software is in the area of testing and debugging programs. You can now single step through a program whilst viewing the state of the inputs and outputs. More than this, in the simulation mode the inputs can be turned on or off as required and, whilst executing the program 'on-line' inputs can be forced momentarily on or off.

More detailed information and a demo copy of this software is available from our website.

Lead The Way

The German manufacturers of fischertechnik have been awarded an order worth millions of dollars by the U.S.A. education initiative 'Project Lead The Way'. PLTW is a not-for-profit organisation that promotes pre-engineering courses for middle and high school students. PLTW forms partnerships with public schools, higher education institutions and the private sector to increase the quantity and



quality of engineers and engineering technologists graduating from the U.S. education system. The number of participating schools has grown rapidly since 1999 to over 1300 schools in 45 states in 2005.

Leading educators across the United States, Canada and the world have adopted fischertechnik as their recommended robotics construction system after careful comparison and investigation. Real engineers also appreciate the functionality of the components for prototyping and modelling purposes. It is also popular for utilisation in home school curriculum, giving children a modern and proven competitive-advantage in technology education. More: www.pltw.org

RoboCup

We have now entered fischertechnik in the dance and rescue sections of the RoboCup Junior Challenge. We used a small microcontroller board programmed in the BASIC language to control our entries. In the 2005 Melbourne regional 'Yowie Rescue' competition our all-girl team came 4th out of a field of 21 entries. The judges commented on the 'consistency' with which our model ran the course - all due to our LDR (Light Dependant Resistor) sensors that were used to detect the various colours - black, yellow and green.

The ROBO Mobile Set is a great kit to get started in the dance or premier rescue competitions. For more information on the Robocup see: www.robocupjunior.org.au

Hits & Tips

1. Did you know that all of the serial commands for the 30402 interface have been duplicated on the new 93293 interface? To set the 30402 mode, just press and hold the 'port' button until the 'com' light blinks rapidly. You can then use all those programs you've written for the 30402 interface (including LLWIN).

Note, LLWIN will work in on-line mode only.

2. Did you know that all of the 30402 commands work on the 93293 interface in 'normal' mode at a baud rate of 38400? To use our Windows software drivers (fishers.dll or fisch32s.dll) at 38400 baud, simply set the 2nd parameter in 'FischerSet' to 10. e.g. use 'FischerSet Port, 10, 0' in VBW. To set the baud rate in LLWIN, locate the file 'INTERFACE.INI'. Make a copy and then change the serial setting under [COM1] or [COM2] to COMM=38400,n,8,1

3. The 93293 interface has the ability to measure the battery voltage. This allows you to monitor the voltage when on-line or indicate (perhaps by a lamp) when the battery voltage is low and to shut down your model if necessary. You could even get your mobile robot to go to a docking station to recharge the battery! The two 0-10 Volt analogue inputs also allow a wider variety of sensors to be used such as the RoboBall Compass and Advanced RoboBall sensors for the RoboCup junior soccer competition.

4. Don't forget, many of the 'hints and tips' of previous newsletters can be applied to the 93293 interface. e.g. using proximity switches, saving inputs using diodes, expanding analogue inputs, using stepper motors or providing sound output. In the next issue we will show you how to use a timer to detect when a motor has stalled and explain why this is so useful.