Fan-Club News 01/2004

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Editorial

Hi Fans,

A sincere welcome to our FAN-CLUB News fresh from the press!

First, we want to thank so many of you for taking part in the competition to find a name for our mascot and in our creativity campaign. Super! We received all sorts of great names and ideas for models. We have decided to present all the models from the construction competition. Over 40 of them, as you can see on the supplementary double spread! The mascot's name is to be Tommy Technik. For his suggestion Alexander Hofmeister from Gehrden will receive a "Creative Box 1000". The winners of the draw have received their prizes in the meantime.

Having again succeeded in significantly increasing turnover in 2003 - not least of all thanks to all of you - of course we would like to continue this positive trend this year.

We are expecting the novelties which will be available from the autumn on to play a considerable role in this. The "Universal II" offers twice the number of models compared to the old one and, in some cases, it enables you to build several models simultaneously; the "Profi Mechanic & Static" combines two extremely interesting elements of technology; and the completely new "ROBO" Series provides almost unlimited possibilities for constructing computer controlled models. You can find out more on pages 3 to 5.

You can surely remember the food dispensing machines built by our fischertechnik trainees? This time, the FANCLUB model is a tissue dispenser. The price for buying the "E-Tec" and "Creative Box 1000" will soon payoff if the whole family gets a cold (not that we would wish that!). The coin checker ensures that payment is made correctly. Since the model is relatively comprehensive, it has taken up three pages in this issue.

Finally, some information on our own behalf: after a few wonderful years with fischertechnik, I am now going to take on new responsibilities in the fischer Group. Many thanks for your wonderful support in the past years! I hope that you continue to have lots of fun in the Club and at least as much as you had with me with Bianca, my colleague, who will be looking after you from now on.

Hello, I'm Bianca. I'm 24 years-old and I will be responsible for you from now on. I'm really looking forward to an agreeable and interesting time looking after you in the Fan-Club. The whole fischertechnik team and I wish Eric all the very best and great success in his new job!

Let's not keep you on tenterhooks any longer - enjoy reading the News!

Page 2: topical

Gallery Model of the Year 2003
On the Internet in January/February the Model of the Year 2003 was elected from six models, which had each won the Gallery Competitions over the past few years. Philipp Mayr won with his innovative "Soup-blowing machine". "Congratulations!" Philipp received a Creative Box 1000. Information on the fischertechnik Gallery is to be found on our homepage: www.fischertechnik.de > Fan-Club > Gallery?

Clubdag fischertechnik Club Nederland
Last year's "Club Dag" of the fischertechnik Club Nederland took place on 08.11.03 in Schoonhoven, the Netherlands. We do not want to withhold from you the impressions of this meeting. You will find the date of this year's Club Dag below.

fischertechnik in "BILD AM SONNTAG"
"Daddy's toys are back in fashion" is the title of an article in BILD am Sonntag. The Sunday newspaper with the largest circulation in Germany (2 million copies sold), the authors present so-called retro-toys spread over a whole page. It focuses strongly on the Dad, Michael, playing with fischertechnik with Mario, his son, and it explains that the construction kit forms a bridge between the generations.

Pages 3-5: Novelties 2004

Again in 2004 we have a explosion of novelties, which was triggered off at the Nuremberg Toy Fair. The specialist dealers were very enthusiastic; and from this autumn you, too, can look forward to the following construction kits:

UNIVERSAL II (93290)
We have fundamentally revised and extended our bestseller, Universal: with extensive building instructions it is possible to build 48 models from 440 building blocks - double as many as before!

With the fischertechnik Universal II for the first time it is now possible to build vehicles and several models at the same time. Of course this increases the fun factor during building and play.

Each of the 48 models that can be made with the construction kit was chosen with care from the point of view of giving not only great enjoyment during play, but also broad learning experience. By making model replicas of devices from everyday life and from the world of work, a basis is created for understanding many complex principles: it is a way of getting to grips with everyday techniques and technology. So the Universal II is the basic equipment for future inventors from the age of 7 upwards!

For the first time you can develop complete play scenes from this construction kit: racing car, starting ramp, Startand-Finish Arch, service station with lifting ramp and tow-car go together to create the racing atmosphere in miniature. A seesaw, a carrousel, and a swing soon turn a children's room into a playground. And the big carrousel reminds one of the fair ground, at the same time demonstrating how the physical dynamics of rotating systems work.

A big broadcasting tower and an inclined elevator/hoist take us way up high. An imitation of a horse head oil pump takes us far down into the depths of the earth.
How does the kneading hook work on Mummy's food processor, which toothed wheels fit into one another on a hand blender and why does Granny's sewing machine clatter up and down so fast? These and other models explain how toothed wheels work and how energy is transferred mechanically.

Of course many models from the Universal II can be equipped with the Mini Motor Set.
Using the Energy Set you can take your power supply from the plug if you do not want to use batteries.

PROFI MECHANIC & STATIC (93291)
How does a standard transmission work; what is a planetary gear and why does a cross-beam stabilise a table? These and other questions are answered for you by the new Profi Mechanic & Static construction kit. You, as the new generation of inventors and tinkerers over 9 years of age, can build 18 models from the 400 pieces (a fischertechnik Mini Motor is included) with the building instructions. There is also an extensive accompanying leaflet to introduce you to the topics of mechanics and statics/structural engineering.

Jump in the car, start the engine, into first gear and away we go. But how does the technology work that makes it possible for us to drive up a mountain in a low gear and somewhat slowly, but relatively easily or to race down the mountain in a higher gear? Driven by the fischertechnik Miini-Motor, you can test a 1:1 transmission, on a simple car, gearing up, gearing down, forward gear and reverse gear.

And, after the first successful test runs, a small transmission with one forward gear and one reverse gear or a differential gear is a challenge to build. How a windscreen wiper works is explained to you by a model 4-bar mechanism with a crank.

However, mechanical functions can be illustrated well without always taking a car as an example. For instance, a thrust crank provides the propulsion for a coping saw. A rack and pinion gear drives the drill head of a box column drill.

The pulley and crane models are also taken from the world of work. And simply by "playing" with a mobile lifting platform, you will understand how a worm gear transmits a rotating movement into linear movement.

The kitchen, too, can reveal fundamental principles of mechanics for us to understand. In Mummy's food processor a so-called planetary gear transmits the power: small cogwheels circulate around an inner wheel like planets and they fit exactly into an outer wheel. A steelyard and a beam and scales explain how a lever works.

But leverage is only one factor in statics (structural engineering). Simple models make the topic easier for you to understand: a wobbly table becomes stable with four cross-beams; and with a so-called binding girder a bridge becomes a safe construction: after all, as master builders you don't want the people who use the bridge to fall in and have to swim .....! The Profi Mechanic & Static is the ultimate technical construction kit for all future mechanical engineers, technicians, or civil engineers,

We reserve the right to perform technical changes or changes to the models or the composition of the construction kits. Illustrations are also subject to change.

The Quantum Leap: ROBO - High-Tech for the playroom

At last, after seven years, we have a replacement for "Intelligent Interface" and "LLWin". At the heart of the new ROBO line, recommended for persons over the age of 12, is the ROBO Interface with its supplements and the ROBO Pro software.

ROBO Mobile Set (93292): The beginners' kit
The new ROBO "Mobile Set" (recommended from the age of 12) makes it possible to construct seven driving robots and a walking robot as well as the new ROB O Interface, the ROBOPro software and the detailed brochure "Programming and control of fischertechnik robots using a PC". It explains the entry into the world of computer controlled models. Among the parts in the construction kit there are two power motors (gear reduction 50:1), 4 sensors, two phototransistors and a lens-tip lamp. The only necessary addition is the "Accu Set" power supply. The robots' tactile sensors detect and circumnavigate obstacles, barriers or edges. One model is able to localize and drive around an obstacle when reversing. A light sensor helps the "Spurensucher" (Tracker) model in taking its orientation from dark coloured markings or the "Lichtsucher" (Light Finder) model from a source of light.

The six legs of the new walking robot are constructed as a 4-bar mechanism. Driven by means of a crank, the movable limbs make a swinging movement, which looks like a walking step when. The six-legged robot paces ahead confidently with its tripod gait.

ROBO Interface (93293): The control genius
The ROBO Interface facilitates communication between the PC and the model. It serves to convert the software commands in such manner that, for instance, motors can be addressed and signals can be processed by sensors, such as push-button sensors, phototransistors, reed contacts etc.

Technical data:

- 16-bit microcontroller
- USB and serial interface (cables part of scope of supply)
- 128kByte flash memory for downloading 2 different programs that are retained even if the power supply is interrupted. 4 9V/250mA motor outputs (1A max.) now with adjustable speed with 8 settings.
- 8 digital inputs
- 2 analog inputs for 0-5kΩ resistances
- 2 analog inputs for 0-10V volts
- 2 inputs for digital distance sensors
- Connection for ROBO I/O-Extension" extension module
- Connection for ROBO RF Data Link"
- Interface to infrared transmitter from the IR Control Set.
- Additional 26-pole male multipoint connector on which all inputs and outputs have been lead through facilitating the convenient connection of finished/readymade models via a single 26-pole IDC plug.

Programmable with ROBO Pro graphic software or with C-Compiler (third party option). 9VDC, 1A power supply (e.g. Energy Set or Accu Set) required in addition.

Comparison of the fischertechnik Interfaces

	Intelligent Interface (30402)	**ROBO Interface (93293)**
Processor	8 bit	16 bit
Memory	32 KB RAM	128 KB Flash
Program retained? interrupted power supply	No	Yes
Interface	serial	Serial & USB
Radio interface	no	ves, optional (ROBO RF Data Link)
Program down load via fischertechnik software	Yes, with LLWin (30407)	Yes, 2 programs with ROBO Pro (93296)
Program download via C	No	Yes (Compiler not included)
Can be controlled with LLWin	Yes	No
Can be controlled with ROBO Pro	Yes. but no download possible	Yes
Outputs (motors)	4	4,speeds adjustable via 8 settings
Inputs (digital)	8	8
Inputs (analog) for Resistances (0-5KΩ)	2	2
Inputs (analog) for (0-10V) voltages	-	2
Inputs (digital) for distance sensors	-	2
max. inputs/outputs	8/16/2/-/-* with an "Extension Module"	16 / 32 / 5 / 2 / 2 * with 1 to 3 "ROBO I/O Extensions"
Interface to IR Control Set	No	Yes
26.pole male multipoint connector for convenient connection of model	No	Yes
Preparation for Internet module	No	Yes
Scope of supply	Interface, instructions, serial cable	Interface, instructions, serial and USB cable
Power supply	9V/1A (not included)	9V/1A (not included)
Recommended accessories:		
Power supply	Mains supply, Accu Set or Energy Set	Mains supply, Accu Set or Energy Set
Input/output extension	1 x extension module	Un to 3 x ROBO I/O extension
Radio interface	-	ROBO RF Data Link
Software	LLWin	ROBO Pro
		C-Compiler (not available through fischertechnik)

* Motor outputs / digital inputs / analog inputs resistances / analog inputs voltages / digital inputs for distance sensors

How does the ROBO Interface actually work - or: why does the model do what I want it to?
To begin with, of course, you have to think about what the model is actually supposed to do. With the help of, for example, the new ROBO Pro software you then transpose your idea into a program in which you bring the components into the sequence that corresponds to your planned course of action.

Basically, the ROBO Interface merely translates and performs the commands of your program - again "telling" the motors and sensors what they should do.
With the processor and its operating system (which contains all the commands you can give with ROBO Pro) and memory, the ROBO Interface also has the ability to decide on its own what it must do if a program has been down loaded onto the interface in the down load mode (the interface is located between the PC and the fischertechnik model).

For instance, the interface does not permit a model to continue to drive along if it comes up against and obstacle or a chasm - it evades it or reverses. The interface knows how to do this because you have programmed it that way beforehand.
Example: the Interface receives the command: "Make motor 1 run at speed 5 to the right" via radio, the USB interface or (in the download mode) directly from the interface memory. In interface lingo it looks like this:

10000001 Command to interface: "Watch out, here comes motor data"
00000001 Data for output 8.. 1, output 1 = on, therefore motor 1 = on the right
00000100 Make output 1 run at speed 5

The interface checks this column of figures as fast as lightning with its operating system and then makes the model perform the actions you want, by applying a certain voltage to the motor output 1 in this case.

ROBO I/O Extension (93294): The Interface Extension
An extension module can be connected to the ROBO Interface with a 10-pole ribbon cable.

Technical data:

- 4 x 9V/250mA motor outputs (1A max.), speed also adjustable via 8 settings
- 8 x digital inputs
- 1 x 0-5kΩ analog input
- USB interface to online operation directly on PC
- Connector for further ROB O I/O Extension

Up to 3 ROBO I/O Extensions can be positioned in series and connected to the 'ROBO Interface. The maximum numbers of inputs and outputs that can be controlled are, therefore:

- 16 motor outputs
- 32 digital inputs
- 5 0-5kΩ analog inputs
- 2 0-10V analog inputs
- 2 digital inputs for distance sensors.

The ROBO I/O Extension can also be connected to the USB interface on the PC as a passive interface, but then it is without the download function. In each case an additional 9VDC, 1A power supply is required (e.g. the Energy Set).

ROBO RF Data Link (93295): the radio Interface
The RF Data Link is a radio interface for the ROBO Interface. The transmitter is connected to the USB interface on the PC and is also supplied with power from there.
The receiver is simply connected to the interface provided for the purpose on the ROBllnterface. No additional power supply required.

This radio interface makes it possible to control the computing models conveniently from the PC, Commands are transmitted directly to the model and performed with the ROBO Pro software.

Technical data:

- Range: approx. 10 metres
- Frequency: 2.4 GHz
- 8 frequencies can be set to operate 8 devices simultaneously in one room (important for school classes)
- Direct communication possible between two ROBO Interfaces on the same frequency.

ROBO Pro (93296): The software
The new graphic programming screen operates with Windows 98, ME, NT, 2000 and XP; a Linux version is in preparation (93297).

ROBO Pro controls ROBO Interface and ROBO I/O-Extension as well as the Intelligent Interface (although not in the Download mode). The time-tested programming of flow charts, consisting of various software components also guarantees the beginner an easy entry into the world of computer-controlled fischertechnik models.

The exchange of data between software components and subprograms can take place both in data via variables or via graphical connections. This ensures an even clearer representation of the program function. Sub-programs are then to be found in a library and can be used without having to understand their internal procedures. This means that even complex program remain comprehensible, even for beginners.

The graphical ROBO Pro programming language also offers important elements of a modern programming language for professional programmers, such as mathematical functions, arrays, recursion, asynchronous events and parallel processing. Does that sound like Gobbledygook? Don't worry; we've explained it all in the box below.

The programs are translated directly into machine language so that even extremely complex program can be performed very efficiently. Even advanced programming professionals will unlikely reach their limits with ROBO Pro. Compiling program or data exchange with other Windows software (e.g. taking over Excel data in arrays) is no problem.

In the on line mode for large-scale models, several ROBO Pro Interfaces are controlled parallel to one another. In order to ensure convenient control of the model it is possible to create individual control panels with switches, regulators, and display elements.

Array: a list in which data is stored during a program sequence and which can then be read out again (tabular variables).

Recursion: means that a sub-program can access itself. Some programs can be most easily and efficiently programmed by means of recursion.

Object: An object links data with the pertinent functions to form a unit. An example of this is a teach-in object that contains both the teach-in coordinates and times as well as e.g. Record and Play functions to record or play-back/retrieve the data. If one uses such an object one does not have to worry about how the functions relate to the data.

Asynchronous events: as a rule, execution is controlled by the program flow. In addition program elements can send each other commands/messages/events that are not synchronized with the program execution. This also makes it possible to simulate electronic circuits that cannot distinguish any program flow.

Parallel processing: ROBO Pro can process several programs simultaneously.

Comparison of the fischertechnik software

	LLWin 3.0 (30407)	**ROBO Pro (93296)**
Operating systems:		
Windows	95/98/2000/NT /ME/XP	95/98/2000/NT /ME/XP
Linux in preparation	No	Yes
Principle:		
Graphical user interface	Yes Programming flow chart	Yes Programming/data flow chart
Features:		
Symbols adaptable according to requirements	No	Yes
Control panel for models	Yes fixed (terminal)	Yes can be configured
Creation of teach-in programs	No	Yes
Adjustable motor speed	No	Yes, with 8 settings
Arrays	No	Yes
Data exchange with Windows software	No	Yes, with Excel
Parallel processes	Yes	Yes
Operating convenience	**	*****
Controls:		
Intelligent Interface	Yes	Yes no download
ROBO Interface	No	Yes
Universal-Interface	Yes	No

What is possible and what is not possible?

Possible:

The Intelligent Interface can also be controlled using ROBO Pro in the online mode. BUT: the download mode of the Intelligent Interface only functions with LLWin.

The ROBO I/O Extension functions as a passive interface if it is connected to the USB interface on the PC (no program downloads possible).

If necessary, the Intelligent Interface, together with its Extension Module, and the ROBO Interface with its ROBO I/O Extensions can all be controlled together via ROBO Pro.

Downloads to the ROBO Interface are now also possible with a Compiler using the programming language C. The full scope of functions of the Interface is available for this purpose.

Not possible:
The Universal-Interface (for the parallel interface) is no longer supported.

The Extension Module (16554) of the Intelligent Interface (30402) or the Intelligent Interface itself cannot be connected to the ROBO Interface.
LLWin programs cannot be used with the ROBO Pro and ought to be rewritten.

Overview of the ROBO line 2004

	ROBO Interface 93293	ROBOPro Software 93296	ROBO RF Data Link 93295	ROBO I/O Extension 93294	Energy Set Power supply* 30182	Accu Set 34969
ROBO Mobile Set (93292)	●	●	II	*		O
Industry Robots (30408)	O	II	II	*	O	
Pneumatic Robots (34948)	O	O	II	*	O	

● - included in construction kit
O - additional necessary accessories
II - recommended accessories (not absolutely necessary)
* - required for own models, if the ROBO Interface inputs and outputs do not suffice

* mains supply (37109) is included in the Energy Set, but is also available separately

The History of fischertechnik Computing
1983: fischertechnik brings the very first computer-controlled construction kit onto the market. At that time there were always special interfaces for computers that you would have to go to a museum to see today. They had such names as Acom, Sinclair, Klein Computer or Micro Professor - and then, gradually, Interface for Schneider, Amstrad, Atari, Commodore C64/128 and, ultimately Amiga and the IBM PC.

In those days programming was carried out, for example, in BASIC (today Visual Basic) or Pascal (now Delphi) and their dialects (GW Basic, Turbo Pascal etc.).

At this time the range includes computing construction kits for training robots, plotters /scanners and Experimental Computing. At the beginning of the Nineties the special interfaces are superseded by the Universal-Interface, which is connected to PCs, Schneider and Commodore computers or Atari. In 1991 the fischertechnik software Lucky Logic for DOS comes onto the market. It shows the beginnings of the direction in which graphical user interfaces are pointing.

The Intelligent Interface and the LLWin 2.1 software and the Mobile Robots complete construction kit areall presented in 1997. The Interface' own processor and the possibility of downloading programmes onto it create a sensation. LLWin makes it possible for beginners to program conveniently using flow diagrams.

In 2000 LLWin becomes LLWin 3.0 a development with new functions and a more attractive user interface; in addition, the much-awaited Extension Module appears on the market.

Parallel to this, friends of fischertechnik have written various drivers for the Intelligent Interface, e.g. for the following programming languages: C, CH, Visual Basic, Delphi etc. IIXPL, a completely new programming language, was developed specially for the Intelligent Interface. We are, of course, delighted to receive this support.

2004: This year the ROBO Series replaces the Intelligent Interface and LLWin. The ROBO Interface and the ROSa Pro software eliminate the weakness of the solution used to date (down load only via LLWin, program not upheld without current, no USS interface) and we are extending these strong points even further. A real quantum leap. And naturally we are excited to see the new models, drivers and programming solutions of our fan community. Things can get going in the autumn and we are looking forward to hearing from you!

This year's phase-out items are: the Computing Starter Pack, LLWin, Intelligent Interface, Mobile Robots II, Bionic Robots, Profi Cartech and Universal.

We reserve the right to perform technical changes or changes to the models or the composition of the construction kits. Illustrations subject to change. All novelties are available from autumn onwards.

Pages 6-8: Fan-Club Model No. 24 Tissue Dispenser

Our model this time is a tissue dispenser for paper tissues created in the style of the worlds' largest fischertechnik food vending machines, which three fischer trainees constructed (see FAN-CLUB-News 02/03). It consists of the E-Tec and Creative Box 1000 construction kits.

A 20-cent coin is required in order to be able to draw out a packet: the coin tester ensures that no other coins work. This consists of a push-button sensor and a photoelectric sensor. Only when both sensors have been activated (the coin presses the push-button sensor while the photoelectric sensor checks if the coin has indeed fallen through), does a motor propel the packet into the dispensing compartment.

Of course, you can reequip the model with a few additional or different parts for example for chocolate bars. Be creative. We wish you lots of fun and success as a vending machine operator!

SUPPLEMENTARY PAGE

Creativity campaign!

Your reaction to the creativity campaign was a very positive surprise to us. Over 40 members took part this time! Our jury was unable to make a final decision, so we have decided to send all participants a special collection of parts for implementing new ideas for models. Not only that: each model is presented on this supplementary double page. You are sure to find one or two more ideas among them.