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News from JVL

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New Servo/Step Motor Indexers

Programmable Indexers for control of all types of drivers with pulse and direction input

In cooperation with Yaskawa´s European office in Germany, JVL Industri Elektronik has developed a new Indexer for precise positioning and speed control of both servo motors and step motors.

The Indexer, Type SMI30, is designed to be connected directly to Yaskawa´s acknowledged series of AC-Servo drivers, including models SGDA, SGDB and DR2. In addition, the Indexer can be used with other manufacturers´ step and servo motor drivers that are equipped with a pulse and direction input.

The Indexers take care of the over all control of speed and positioning of the motor and are therefore a suitable alternative to PLC positioning control units or a dedicated servo motor controller with built-in indexer.

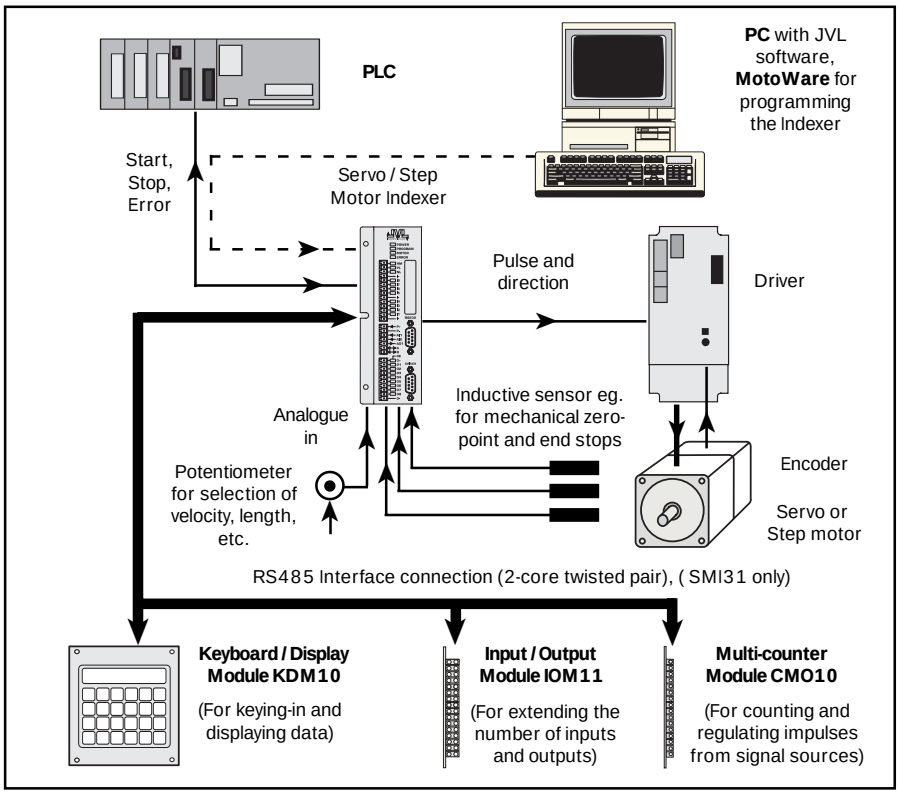
Indexer SMI30 is programmable with PLC facilities, so that even advanced programs can be built-up and stored permanently in its internal EEPROM. It is possible to run the motor at different speeds in the same motor operation, to select acceleration, deceleration and displacement, as well as interrupt and timer functions. 11 inputs, 8 outputs, 2 analogue inputs and 1 analogue output make it possible to connect a wide range of different kinds of sensors, relays etc.

An extended model, SMI31, with built-in modular interface gives the possibility for connecting a Keyboard/Display Module so that process parameters easily can be keyed-in and read out.

The Indexers can operate over a very large speed range of 2 to 2 000 000 pulses per second and with an accuracy of ±0.5 pulses per second. This ensures the very best accuracy in positioning.

Programming takes place via the built-in RS232/485 interface. JVL´s windows-based programming software, MotoWare, makes it easy to perform programming using simple commands on any PC, which can also be used for monitoring program parameters.

The Indexers are CE-marked and fulfil the requirements of the EU Low-voltage directive.



Handling and Assembly Machine for Hearing Aids

The company of G&E Maskinteknik in the town of Farum north of Copenhagen is using JVL step motor controllers in a compact machine to assemble filters for Danavox hearing aids.

For many years, the Danish company G&E Maskinteknik has co-operated with GN Danavox in the automation of plastic component manufacture for Danavox's world-renowned hearing aids. G&E, which is located in the town of Farum north of Copenhagen, is well-known for its design and production of specialised machinery for manufacture in the electronic, medical, plastics, and foodstuffs industries. G&E's co-operation with Danavox has resulted in a long series of specialised machinery, from injection moulding machines to machinery for automatic assembly and testing of complete switches for hearing aids.

The latest machine for automating Danavox's plastic component manufacture is a very compact assembly unit for the small filters which are attached to the hearing aid's individually tailored casing in order to protect the loudspeaker from dirt. These filters must be changed regularly and are therefore supplied in a small patented dispenser containing 10 filters. The dispenser is designed to enable a filter to be easily mounted on the hearing aid without the use of tools. The expended filter is also removed using the dispenser and placed in a container which is an integral part of the dispenser unit.

Each dispenser consists of 3 injection-moulded plastic components: A lid, a bottom and a filter component containing the 10 filters. The task of automation was to die-cut the small circular filter discs, insert one in each filter unit, and thereafter assemble the complete dispenser.

The resulting automatic assembly machine is illustrated in the accompanying figure. It is controlled partially using pneumatic cylinders and partially using 2 JVL Step Motor Controllers type SMC15B. One of the step motors is used to transport the filter units onto a small rotary table for assembly and thereafter to transport the units back for assembly with the dispenser lid and bottom components. This movement is accomplished using a gear and spindle.

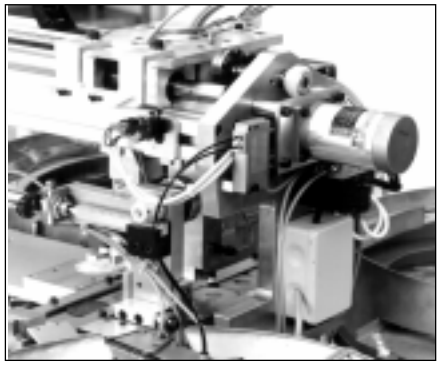
The complete handling and assembly machine for filter dispensers.

The second step motor is used to turn the table 1/5th of a revolution at a time. With each rotation sequence 2 filters are cut. In the next sequence, these are mounted into place while two new filters are cut.

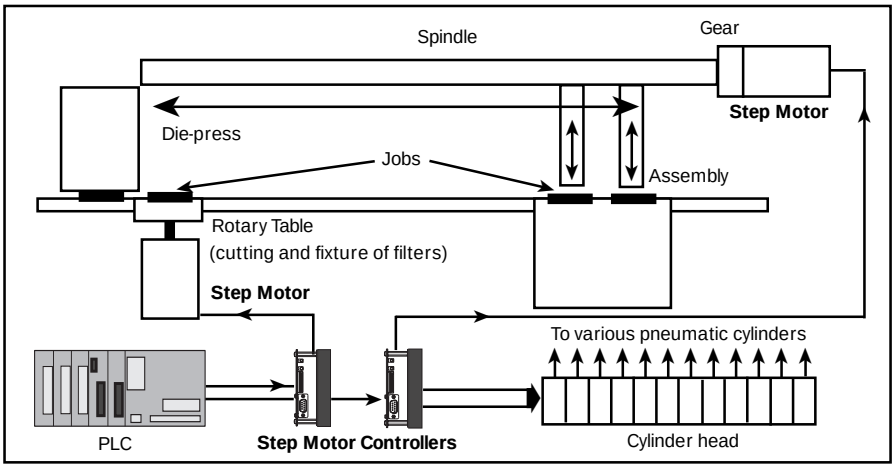
All of the machine's functions are controlled by an overall PLC, while the movement of the 2 step motors is controlled by programmes in the 2 Controllers. Step motors were chosen for the above functions because they provided the simplest and most economic method to control the movement.

The machine produces 5 to 7 complete filter dispensers per minute and will be installed at Danavox when the final run-in tests have been completed.

Rotary table with step motor.



Spindle with step motor and gearing.



Unique in Danish Motor Controllers

In the Spring of 1996, the above headline appeared in the "Industrial Technology" supplement of the Danish publication "Metal and Machine Industry". With kind permission of the publishers we reproduce the article here, which we feel gives a good and well-balanced presentation of our company.

Innovation. Denmark's only manufacturer of controllers for servo and step motors is located in Birkerød. The company has achieved success with its compact motor controllers which are tailored to the Danish market. But the rest of the world is also calling.

by Morten B. Olsen

In the course of only 6 years, two innovators have created and established the company JVL Industri Elektronik A/S, which today employs a total of 11 people and has an annual turnover of some DKK 10 million. The company develops and manufactures electronic controllers for AC and DC servo motors and step motors - the only company of its kind in Denmark. The controllers are complemented by a range of motion-control system products for which JVL acts as agents. The company's customer base includes major Danish firms such as Danfoss, Grundfos, B&O, Novo Nordisk and Coloplast. But a large proportion of the controllers is also sold to the many Danish machine manufacturers.

One of the reasons for the significant positive development that JVL is experiencing is the company's ability to adapt to the Danish market. "We have a major advantage in that we very quickly react to the feedback we receive from the Danish market. Customers can, so to speak, go directly to the source, i.e. to us as manufacturer of the controllers. This means that our products can be continuously adapted to actual needs on the market," says one of the two owners, Bo Valeur Jessen, Technical Director at JVL. Co-owner Mads Vernon Jørgensen is Managing Director of the wholly-owned company. Despite the two directors' titles, their daily work is not solely taken up with meetings and planning. Both have backgrounds in the electronics industry and themselves take care of a large part of the development work and problem-solving for customers.

Only the most necessary features

The philosophy behind JVL's controllers is to keep solutions as simple and as compact as possible. Standard controllers are designed as far as possible to enable them to be directly programmed by the user. But JVL's complete product programme encompasses both complex advanced controllers and simple units. "For large quantities, we emphasise on ensuring that the controllers do not include anything more than is necessary for the specific application. In this way we keep prices down," explains Bo Valeur Jessen. "But we also provide solutions to specialised tasks, where we produce one or a few units to specific customer requirements."

The overall trend however is towards the same controllers being used in many applications, so for JVL it is a question of balancing simplicity with a broad range of applications. Costs of DKK 30-40,000 for CE approval of every new product type are a further argument for some kind of standardisation. Even a minor modification of a product type means a new, expensive round of approval.

Carefully considered development

At present, JVL is in full swing with the development of a new series of programmable AC servo motor controllers which can be used to control motors rated up to 1 kW. The controllers are based on a 16-bit microprocessor and a 32-bit signal processor and are completely in line with the JVL philosophy of achieving flexibility in control and application. The controllers have been developed with the economic support of the industrial development council and the Danish Institute of Technology has also provided consultancy. "We have been working on the project for 18 months and the prototype is ready. In May 1996 the final model will be launched on the market," says Bo Valeur Jessen.

A thorough and carefully considered development process is the basis for every new product. "We have ideas about what a new product should be able to do, for example based on our own experience and feedback from customers. When we have charted these ideas thoroughly, we begin work at the drawing board," says Bo Valeur Jessen with a knowledgeable smile that makes the complicated process sound very simple. Once development work has been completed, components are contracted to suppliers and only final assembly and testing is carried out by the company itself.

Complete concept

From its beginnings, concentrating solely on controller units, JVL has now developed a total concept which includes all the necessary products for building a complete motion control system. "We are continuously developing and have built up several agreements as agents for products that supplement our own," says Bo Jessen. This means that products such as PC-cards, planetary gears, clutches, mechanical components and motors are now included in the wide range offered by JVL. The company has also obtained the rights to market motors

Unique....

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and servo systems from the Japanese company Yaskawa which is one of the world's largest producers in this field.

Ambitions to venture further abroad
JVL controllers are primarily sold in Denmark. Only 10-15% of production is currently exported, via the company's own agents in France, Grat Britain, Ireland, Holland, Norway and Sweden. However a large proportion of JVL units are used abroad, as they are mounted in many of the machines that Danish machine manufacturers export. "We are working to increase exports and are currently looking for suitable representatives in other countries. For example, we believe there is a market for the new servo controllers," says Bo Valeur Jessen. "But it's expensive to venture into new markets and we have just invested a lot of money in the new development project, so we have to take a moment to catch our breath again."

Servo Controllers with Sequential Program Execution

2 New Versions of JVL's AC Servo Motor Controllers

In the fourth quarter of 1996, the latest 2 versions of JVL's AMC10-12 series of AC Servo Motor Controllers were released.

These 2 Controllers, designated AMC12B and AMC12C, correspond to models AMC11B and AMC10C respectively, but provide significant development of the Controller software and include JVL's module interface.

The module interface enables several controllers to communicate with one another and is primarily intended for use in multi-axis systems in which a master controller can be used to control up to 30 slave controllers. The module interface is based on a simple 2-core twisted-pair cable and operates at 50 Kbit/second.

Like JVL's programme of Step Motor Controllers, the AMC12 AC Servo Motor Controllers can be connected to various standard modules such as a keyboard/display module, I/O module, counter modules, etc.

The most significant feature of the AMC12 controllers is their programming capabilities. A control program can be stored in the AMC12, enabling it to independently execute positioning sequences and activation of outputs. These features correspond to those available with JVL Step Motor Controllers, but with the significant difference that the AMC12 contains 2 processors which make it possible to operate a motor at the same time as controlling a second process. Via program control, it is possible to read the motor position or velocity, activate outputs, etc., while the motor is running. This provides the advantage that in many situations it is possible to do without a PLC and let the servo controller take total control of the system.

The AMC12, like models AMC10-11, can be programmed using JVL's *MotoWare* software. *MotoWare* runs on a standard PC under Windows 3.1 or Windows 95. Basic parameters, etc., are adjusted in the same way using the parameter window and programs can be keyed-in using the editor window. All program parameters, etc., can be saved to disk and printed.

Industri Elektronik

...when motors must be controlled

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