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News from JVL

A newsletter from JVL Industri Elektronik Autumn 1996

Now, newly developed AC Servo Systems from JVL

New AC Servo Controllers offer compact design and unique features

A series of completely new programmable AC Servo Controllers, designated AMC10, 11 and 12, have been added to JVL´s product programme. These Controllers can be used for controlling AC motors up to a rated power of 1kW. They are based on a 16-bit microprocessor and 32-bit signal processor and are characterised by great flexibility for a range of control applications. The Controllers can be controlled directly via the built-in RS232/RS485 interface, or indirectly using 6 digital inputs. In addition, they can be supplied with a built-in Interbus-S, DIN 19258 interface. The Controllers can be directly connected to PLCs with controller modules. Up to 255 units can be connected to the same RS232/RS485 bus, thus enabling a PC or PLC to function as controller in a multi-axis system.

With JVL´s programming software, MotoWare, motor-power, velocity, torque etc., can be monitored graphically and comparisons made with previously recorded curves. This facility greatly assists control and troubleshooting.

The 6 digital inputs refer to 64 user-defined position and velocity references which are stored in registers via the built-in RS232/ RS485 interface or an Interbus-S interface. The Controllers can also be velocity controlled via an analogue input of +/- 10V. In addition, they can be used as a step motor system using step-pulse and direction signals.

A special mode enables electronic gearing at a selectable keyed-in ratio with a resolution of 1 to 1000.

In the standard model, the preset values are executed in accordance with external signals, while an extended model enables the Controller itself to perform a sequential program execution.

JVL´s new AC Servo Controllers offer many application features. For example: electronic gearing with very high resolution, built-in sequential program execution, 64 registers, 11 inputs and 8 outputs. They use FLASH PROM for simple upgrading and are CE-marked.

8 general purpose outputs can be configured, for example to give a signal when the motor has reached its position, or to give an error signal if an obstruction occurs which prevents motor operation.

These Servo Controllers are very easily programmed. For example, various velocity profiles can be achieved by defining acceleration, deceleration (linear or s-curve) and velocity. The Controllers also have built-in programmable end-of-travel limits and a zero-point seek function.

As the signal from a feed-back sensor to the digital control loop, the Controllers accept both a balanced and an unbalanced signal, e.g. from a standard 2-channel incremental encoder. The Controllers are prepared for master/slave interpolation control in 2 axes.

A new feature of these Controllers is the use of FLASH PROM, which enables the basic programming to be updated at a later date if required.

All inputs and outputs are optically isolated and voltage-overload protected to provide high immunity to spurious noise signals. Similarly the Controllers are protected against thermal overloads and short circuits. The Controllers are designed to fulfil EMC requirements and are CE-marked. The cabinets can be mounted in a standard 19" rack or surface mounted.

Model	Motor Current		Sequential program execution	Built-in Interbus-S Interface	Built-in power supply. 150W/230VAC
	0-6A cont. 12A peak	0-12A cont. 25A peak			
AMC10B	X				
AMC10C		X			
AMC11B	X				X
AMC12B	X		summer 1996	summer 1996	
AMC12C		X	summer 1996	summer 1996	

The new AC Servo Controllers are available in 6 and 12A models, with or without power supply. In addition, with facility for sequential program execution and with Interbus-S interface

AC and DC Servo Controllers can be used in 5 different modes of operation

The facility for using different system configurations enable JVL Controllers to be used in a very wide range of applications. The following presents an overview of the basic modes.

Step-pulse Mode

In this mode of operation, the Controller functions as in a step motor system. The motor moves one step each time a voltage pulse is applied to the step-pulse input. Velocity, acceleration and deceleration are determined by the external frequency. The encoder enables monitoring and adjustment during motor operation, a facility not available with a normal step motor system. In addition, the AMC Controllers provide a facility for electronic gearing at a keyed-in ratio.

Positioning Mode

In this mode, the Controller positions via commands sent over the RS232/RS485 interface. Various operating parameters can be continuously changed via the interface while the motor is running. This mode is used primarily in systems where the Controller is permanently connected to a PC via the interface. It is also well suited for setting up and testing systems. Up to 255 units can be coupled on the same interfaceline.

Register Mode

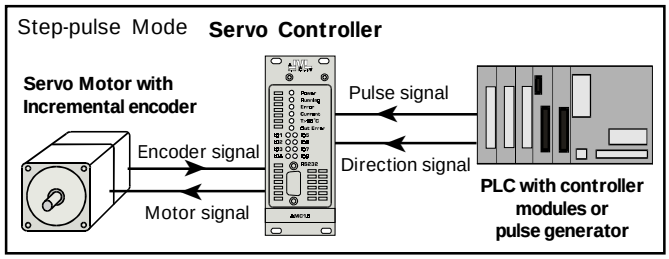
In this mode, the Controller's registers contain the parameter sets, positions, velocities, etc., required by the actual system. The registers can be addressed via the digital inputs and the order executed by activating a start input. This mode gives maximum utilisation of all the Controller's facilities since the Controller itself takes care of the entire positioning sequence.

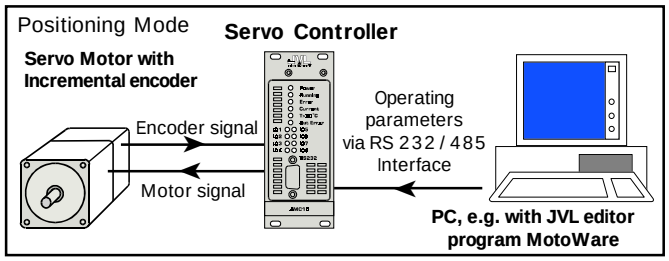
Velocity Mode

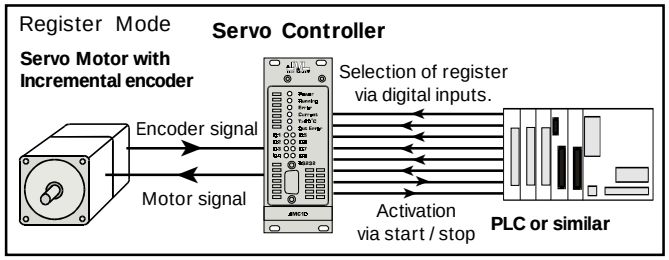
In this mode, the Controller controls the motor velocity via the analogue input. This mode is typically used in simple applications, or for applications which include an overall unit, e.g. a PLC or a PC-board, which controls velocity and positioning.

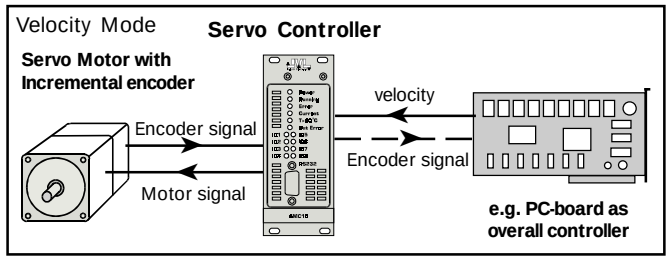
Torque Mode

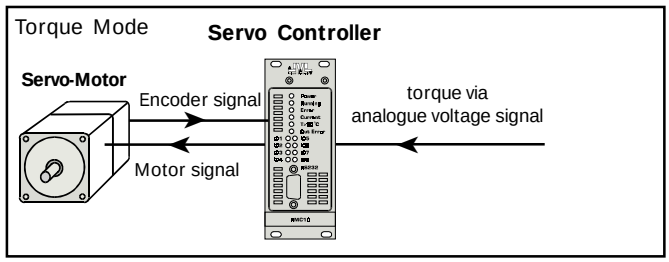
In this mode, the Controller controls the motor torque via a voltage applied to the analogue input. Typical applications in this mode include spooling or tensioning of foil, cable etc. No encoder is used with DC-Controller DMC10 in this mode.





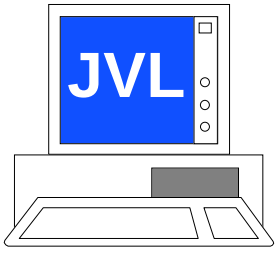






JVL now on the internet

Find us on the world wide web at: http://www.jvl.dk and get up-to-date information



As You may have noted, JVL can now be found with our own homepages on the internet. Here you can always find the latest news about our products and developments, as well as much other information about our company. Use it to get quickly informed about what we can offer in the field of motor control. Also includes examples of application and a company profile.
Use e-mail for fast communication. Our adress is:

jvl@jvl.dk

MotoWare - a new programming tool

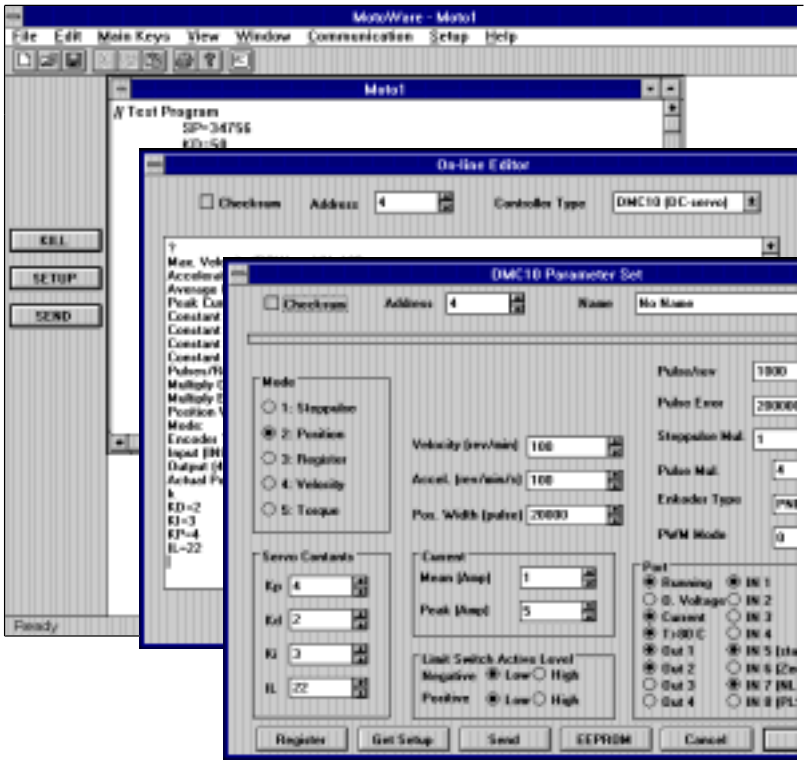
New possibilities for easy programming and communication with motor controllers

With JVL´s new Windows-based programming tool, MotoWare, it is now easier to program your motor controller. MotoWare provides the facilities for easy editing of one or more controller programs simultaneously. Each program is saved in a separate disk file which can be opened and edited as required. Once a program has been completed, it can be readily transferred to a Controller. Simply select the Controller type, its address, and whether checksum is to be used during transmission. Then select the [Send] button and the program is transmitted to the chosen Controller in the correct format.

MotoWare also enables on-line communication with a controller. The on-line editor window functions in the same way as a terminal program. Simply key-in the required command and press [Enter] to send the command to the selected controller. All Controller responses are monitored and displayed automatically.

For users of DMC10 DC Servo Controllers and AMC10 AC-Servo Controllers, it is now even easier to configure the correct set-up. Windows display a complete overview of the various parameters. Parameter sets can be stored under their own name, and can be retrieved, edited and sent to the Servo Controller. The set-up can also be retrieved from the Controller and displayed on the screen or saved on disk.

Users of AMC10, AC-Servo Controllers, can monitor motor-power, velocity, torque etc. graphically and make comparisons with previously recorded curves.This facility greatly assists control and troubleshooting



MotoWare provides new facilities for programming and communication with motor controllers.

Mini-step Driver gives smooth motor operation

New mini-step drivers operate with lower step frequency

Mini-step Driver SMD40 has had great overall success. It fulfils the requirements for a small compact unit which is easily incorporated into control systems. It is available in 3 - 6 and 9 A models, all with a supply voltage of between 15 and 80 Volt. In addition, a range of Drivers with various step resolutions are available: models with full-step, half-step, 1/4 and 1/8 step, with 10 ministeps/full step, and models where resolution can be selected between 10, 25, 50 and 125 ministeps. Thus resolutions up to 25000 ministeps/revolution can be obtained. All models are supplied with the special feature of selectable step curve sequencing which provides optimum matching for different types of step motor.

The use of ministeps instead of the more commonly used full or half step gives significantly smoother motor operation and excellent positioning accuracy.

These drivers provide many additional advantages: error output, optically isolated inputs and outputs, automatic switching between operating and stand-by current, and a facility for external control of current. These features make them universally applicable for many tasks in the field of motor control.

The relatively low step resolution of 1/8 and 1/4 step per full step which can be achieved with the latest types of mini-step drivers is sufficient to achieve smooth motor operation in many applications and

provides the advantage that the applied step frequency need not be very high. This takes account of the fact that certain PLC boards or microprocessor boards cannot generate a step frequency higher than 20-30kHz, and a mini-step driver with 1/125 step requires as much as 625kHz to operate for example at 5000 step/sec.

New EMC Controller gives protection against errors

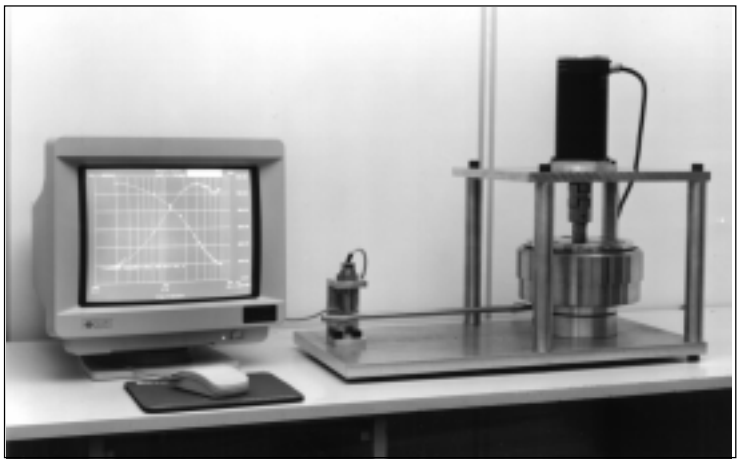
Most JVL controllers are now "CE" marked

In the Winter of 1993-94, JVL Industri Elektronik introduced an EMC-tested step motor controller. This was the first in a planned series of controllers which will fulfil EU requirements for electromagnetic compatibility, i.e. the ability of equipment to withstand external electrical interference and, not least, its ability to eliminate its own electromagnetic influence on the surrounding environment. The EU Directive comes into force in 1996, after which all electronic equipment is required to be "CE" marked. This is to ensure that the increasing numbers of electronic equipment do not adversely affect their surroundings and each other. In addition to the facility for selecting between full and half step operation, the new JVL Controller SMC17 offers 1/4 step operation, which in many situations can give significantly smoother motor operation. It has a very compact construction with 4-layer PCBs and all the attention paid in design that is characteristic of JVL's complete product range. As with other JVL Controllers, all user inputs and outputs are short-circuit protected and optically isolated.

Torque Meter gives very precise system calibration

A newly developed measurement set-up reveals whether a driver-motor combination supplies the desired torque at all velocities.

A precise torque measurement system has now been developed by JVL. This gives us the possibility to automatically print out torque-velocity and power curves for any combination of motor and driver using step, AC, DC, and other motors. The measurement system's main application will lie in the development of new types of motor controller and for testing and comparing motors. In addition, we will be able to offer our customers a measurement calibration service for a given system, thus eliminating any uncertainty regarding the torque produced as a function of rate of revolution. We will also be able to supply the complete system to customers who wish to calibrate their motors or control systems themselves. The torque meter is based on a hysteresis brake and measures torque using a precision strain gauge. In its present version, the system can load the test motor up to 14Nm or 800W. The software is menu-based and curves can be shown on screen, saved, or printed on a printer.



Industri Elektronik

...when motors must be controlled

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