News from JVL

A newsletter from JVL Industri Elektronik A/S Number 8

New Field Bus Gateway for Profibus and more

Field Bus Gateway makes it easy to connect JVL Controllers to field-bus systems

JVL has now launched a series of Field Bus Gateways that enable JVL´s AMC/DMC Servo Controllers and SMC Step Motor Controllers to be connected to field-bus systems.

The FBG series of gateways is used to interface various field-bus systems such as Profibus, DeviceNet and Interbus, etc., to JVL units that are equipped with an RS232 interface. They thus act as a gateway between a field-bus and an RS232 and translate commands bidirectionally.

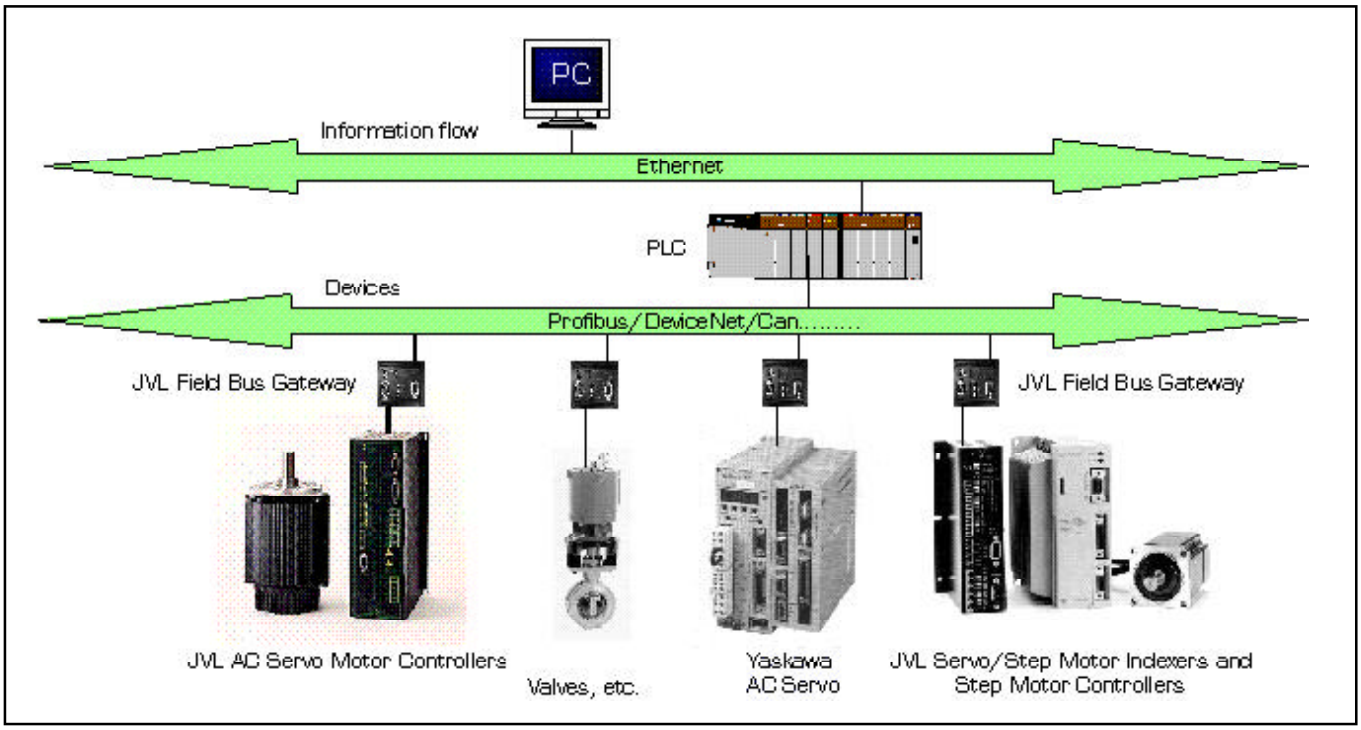
With a PLC for example, it is possible to control velocities, displacement and register contents directly from the field-bus, and to read error codes, position, register contents, inputs and outputs of the JVL modules connected. Important operating parameters, I/O status, etc., are continuously monitored by the FBG10 and can therefore be quickly read by the field-bus. The use of the FBG10 series of Field Bus Gateways provides an inexpensive solution for applications including a field-bus and JVL modules with an RS232 interface.

Customised versions of the FBG10 for RS232 protocols other than JVL's can also be produced on order.

Features

- Fieldbus protocols:
  Profibus-DP slave
  CAN - OPEN*
  Interbus-S slave*
  P-Net slave*
  DeviceNet slave*
  Others, to order
- RS232 interface
- Field-bus slave addresses set via DIP switch
- 10-30 VDC operation
- Compact unit, easily mounted on DIN rails
- LED indication for Power, Ready, Busy RS232/Fieldbus
- Differential bus interfaces with opto-coupling
- Field-bus rate, 1.5 Mbits
  Dual port RAM for exchange of data
- Can be connected to JVL Controllers AMC1x, AMC2x, SMC2x, DMC10 and Indexer SMI3x

* under development



JVL Equipment used in Patented Glass Process

Step motor Controller, AC-Servo Controllers and Indexer in advanced glass processing machine

Innovative company *Wave Glass Technology* has just completed a model of a newly patented glass processing machine for which JVL has supplied Controllers and motors and has taken care of software development of the machine's control system.
The model is a so-called "cold" machine which processes copper plates. The final machine will be 5 times larger and will process heated glass plates.

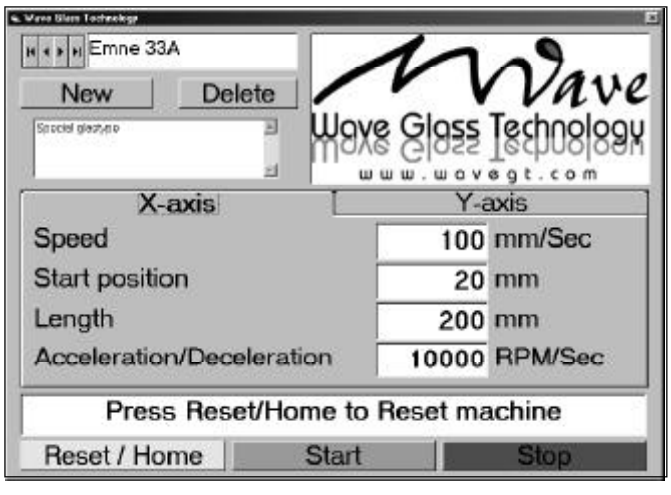
The machine represents an entirely new and revolutionary method for processing plate glass so that it can be bent into a required form. The principle of the process is that the glass is fed through a series of double rollers. Using a template and pneumatic control, the rollers are vertically adjusted to provide the required form. In the final model, which will be five times larger than the prototype model, step motors and spindles on each roller will be used instead of a template and pneumatic control.

The advantage of the new machine is that it functions completely without the use of tools. And, without stoppages, it can be re-programmed to yield other forms — including s-forms.

In the prototype model, a step motor controls the feed of the glass plate. An AC servo motor controls horizontal movement, i.e. forward and backward control of the template. A second AC servo motor controls the vertical movement of the template. The Windows-based software that controls motion in the individual axes has been developed by JVL.

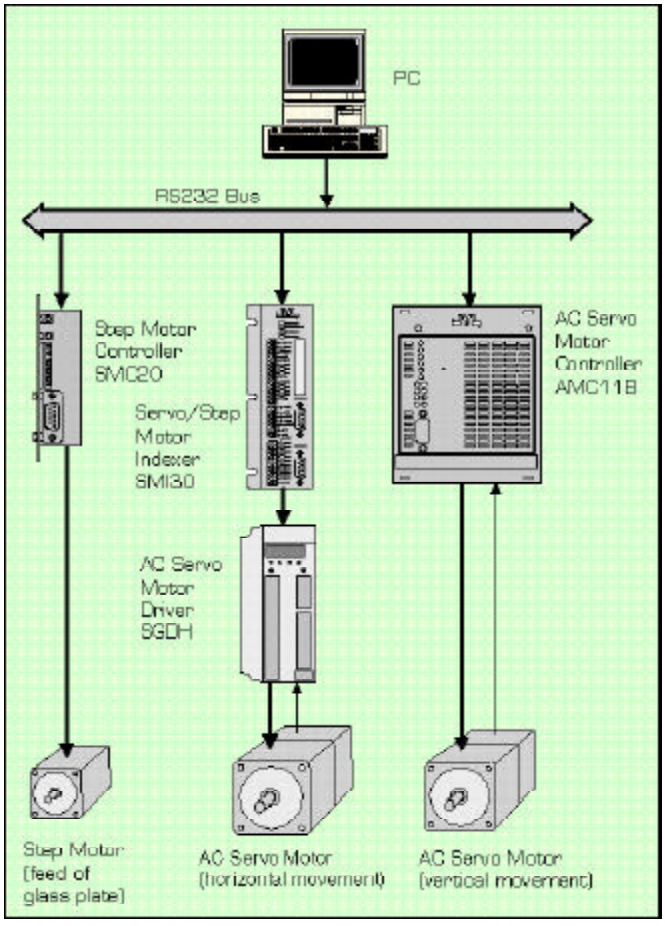
The machine has been developed by Wave Glass Technology and constructed by *Maskinbygger Arne Steens Eftf.* in Hillerød, north of Copenhagen. Development has been subsidised by *Vækstfonden*, *Teknologisk Innovation A/S*, *Uni-Bank*'s innovation fund and *Amagerbanken*.

The machine's designers have many years of experience in this specialised field and have great expectations of the project. Construction of the first full-scale production model for a European customer is expected to begin in the Spring of 2000. JVL has been extremely pleased to take part in this exciting, innovative project.



One of the PC screen views developed by JVL. Machine configuration can be changed easily and quickly without stoppages or changing tools.

The finished model of the glass-plate processing machine.



The machine's control system, consisting of a PC, a Step Motor Controller, and 2 AC Servo Controllers in an RS232 network.

New Turntable offers Simpler Operation

JVL´s popular turntable has been further developed with new gear types and improved operation

JVL is now introducing the 2nd. generation of TurnMaster — with greater radial/axial loads, more compact gears and a lower price. TurnMaster is a complete turntable concept that includes:

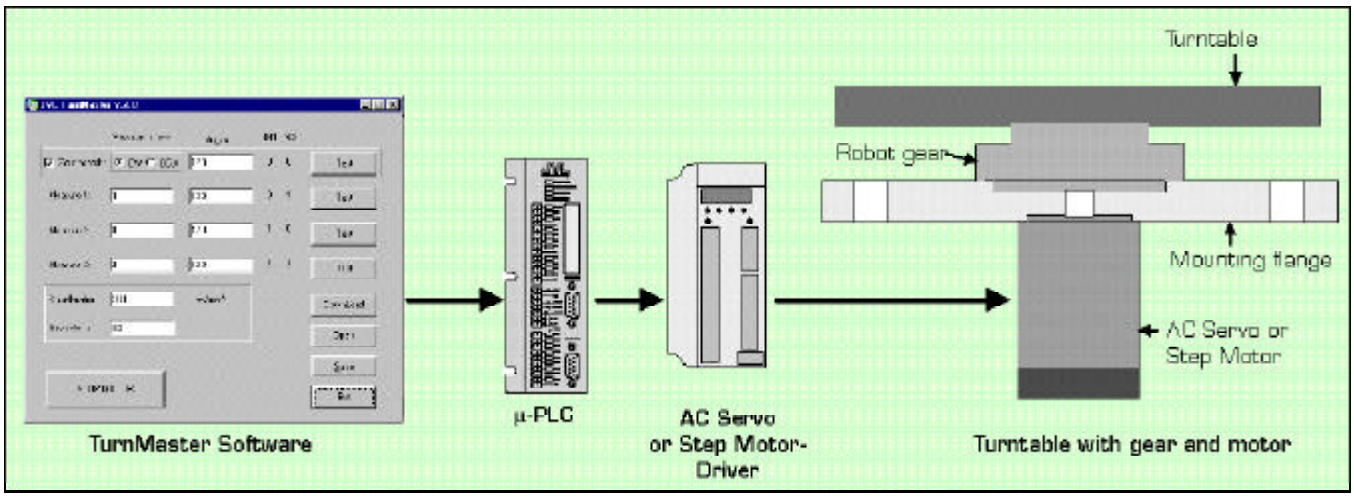
- ▲µ-PLC with integrated servo/step controller.
- ▲AC Servo or step motor driver
- ▲AC Servo or step motor with or without brakes
- ▲Play-free robot gear with integral axial/radial roller bearings.
- ▲Mounting flange between gear and the customer's machine.
- ▲Windows software for configuration of the TurnTable.
- ▲Manual

Advantages of an electrical turntable:

- No fixed stepping
- Set-up using user-friendly TurnMaster Windows Software
- Very favourable pricing
- Acceleration, velocity and stop positions can be adjusted using TurnMaster software.
- Choice of stepped or continuous operation
- Can be programmed to switch between various step settings.
- Can be integrated with PLC/PC systems.
- Can handle controlled stoppages
- Can be customised to special requirements
- Modular construction

Turnmaster software can be used to set up the system in only 2 minutes. No programming is required, only configuration.

Example of TurnMaster gear type TS140 :
Gear diameter : Ø 140 mm
With a turntable plate of Ø 1 m, the Turntable can be loaded by 486 kg on the periphery.
Accuracy at the periphery will be better than 0.1mm.
Speed can be selected from 0 to 100 rpm.
Torque can be adjusted from 0 to 536 Nm.



JVL Nominated as Gazelle

Every year, Danish financial daily, *Dagbladet Børsen,* nominates several Gazelle companies who have distinguished themselves as the most rapidly growing companies in Denmark. In 1998 JVL Industri Elektronik A/S was one of the chosen Gazelles. The criteria for selection are: 1) that turnover is greater than DKK 1 million; 2) that growth in the past fours years has been positive; 3) that turnover in the same period has doubled, and; 4) that the sum of earnings must be positive throughout the period.
We are extremely pleased by the confidence JVL's customers have placed in us to make this nomination possible.

JVL Represented in Portugal

From the 1st September 1999 the company *Sensortec* has represented JVL´s products in Portugal. Sensortec provides a range of supplementary products in their programme of automation equipment and has offices both in Lisbon and Porto. Our range of motor controllers complements Sensortec´s current program very well and we look forward to successful co-operation.

SENSORTEC
Engenharia de Sistemas Industriais, Lda

New Control Centre in AC Servo Controller AMC 20

Flexible control for all applications

The control centre of our new AMC20 AC Servo Controllers consists of a Digital Signal Processor, DSP. The Controller's configuration can be changed by the user by selecting different modes of operation. The figure below shows the configuration for positioning mode.

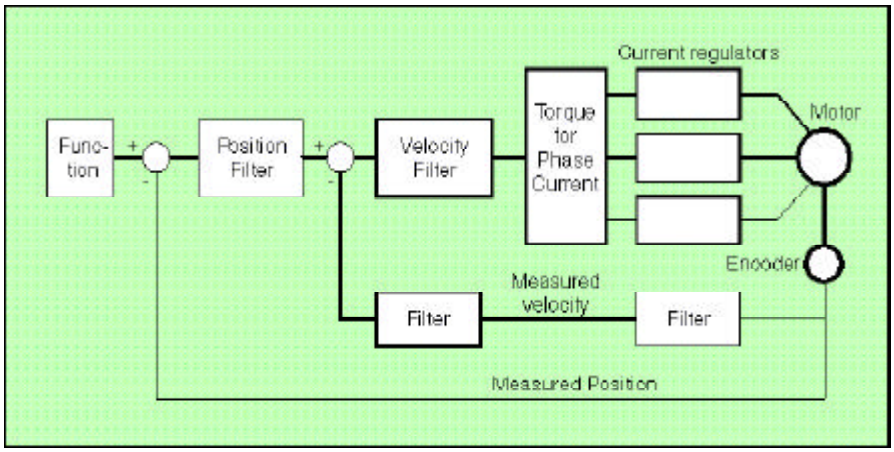
Other main modes of operation include Torque and Velocity modes. A user can create variants of these modes by including functional elements such as a ramp generator before the regulator.

The regulator's filter functions are very flexible, allowing configuration up to 3rd-order filters. It should be noted that a conventional PID filter is a 1st-order filter. JVL's regulator means that a user can, for example, implement a velocity regulator in which not only the error in velocity, but also the error in positioning is zero.

In all modes of operation, the user can specify maximum limits for acceleration, velocity and torque where relevant. For example in torque mode, the user can specify a maximum velocity at which the motor will run under any circumstance. In velocity mode, a maximum torque and maximum acceleration can be specified.

Filter functions are implemented using Z-transforms. This technique involves the DSP solving difference equations instead of differential equations, making the process far more effective and not least more accurate. The sampling frequency for current regulation is fixed at 20 kHz, while the sampling frequency for the positioning and velocity loops can be controlled by the user up to 10 kHz.

A user can collate a set of process variables at a measurement frequency corresponding to the sampling frequency. This function can be used for either automatic or manual tuning of parameters. A trigger function is included, for example to enable any overshoot in positioning to be recorded and documented.



JVL at HI99

At the Herning Fair, one of Denmark's major trade fairs, last September, JVL once again had several fruitful days with many guests visiting our stand. Interest was focused especially on our new large AC Servo Motor Controllers, on the inexpensive Spinea robot gears, and on our very attractive fair offer of a small step motor controller — complete and ready to use with software, motor and cable.

We were very pleased to welcome customers old and new and to have the opportunity to present our entire product range.

Industri Elektronik

...when motors must be controlled

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Representative