JVL News

JVL...integration in motion

Number 19

A newsletter from
JVL Industri Elektronik A/S

JVL MAC motors - now in 400W version

JVL now introduces a MAC400 integrated motor for the medium power range

In recent years, integrated brushless servo motors from JVL have achieved a very high reputation throughout the world for their ingenious design. The existing range of 50 to 141W and 800W motors has now been supplemented with the introduction of a mid-range 400W model.

All of these motors are small, compact, and easy to install and set up. The driver, controller, encoder and Hall sensor are all integrated within the motor in a robust, splash-proof housing.

In addition, the JVL integrated MAC motors utilize a unique modular concept. Plug-in expansion modules adapt the motor to the application. You can choose connector type, e.g. D-Sub, cable glands or M12 connectors, and you can freely choose between Profibus, DeviceNet, CANopen or nano-PLC control. High-speed and wireless modules further add to the possibilities. This means MAC motors provide you with opportunities unmatched by any other motor on the market. Also equally important, you only pay for what you need. Moreover, if the feature you require is not available, we offer to develop your own customised module.

The new MAC400 provides all of the same features as the larger MAC800 model and in addition offers:

- Absolute multiturn encoder
- Prepared for PowerLink; EtherCAT; Ethernet/IP; ProfiNet and SERCOS
- Even lower cost due to newest technology and production techniques
- Improved 2-channel power dump circuit
- 2 RS422 channels for encoder in/output and SSI encoder, etc.
- 6 IO for capture of position; interrupt, counters, enable, timer and PLC functions
- High-speed serial interface
- Plugable power connectors
- Natural cooling, no fan

Among the many well-known advantages of using an integrated motor like the MAC motor, the following can be mentioned:

- Simple installation. No cables between motor and driver
- EMC safe. Switching noise remains within motor
- Compact. Does not take space in cabinet
- 24VDC for control circuits
- Option for built-in brake
- All MAC motors use the same expansion modules
- CE approved/MAC800 UL recognised, pending for MAC400
- Built-in mains supply in MAC400 and MAC800
- Low price

The MAC motors offer the following interface options:

- From PC/PLC with drive-commands via RS232/RS485/RS422
- Pulse/dir. or quadrature inputs.
- 12-bit ±10V input for speed, position or torque control
- A+B encoder output
- Register mode via 4 inputs or serial commands
- Option for µPLC built-in
- The new MAC400 model has been developed because of customer requests for a mid-range solution in the highly successful MAC series. We are sure it will live up to the strict requirements we put on all our MAC motors regarding performance, versatility and reliability.

Laser scanner uses JVL MAC Motors

DHI delivers large scanner that utilises JVL equipment

Located in the town of Hørsholm north of Copenhagen, the DHI Group has recently completed development of a new large scanner for investigating the effects of the sea on installations such as harbours and ports.

DHI is an independent, international consulting and research organisation that operates in fields such as water and marine environment, chemical management, industrial environment, water and marine resources, coastal and marine engineering, hydraulic structures, as well as hydrodynamics and related areas. In coastal and marine engineering, DHI's expertise is heavily involved in numeric modelling and hydraulic test facilities for testing harbour installations under various wave conditions. The test waves are created by large, built-in wave generating systems for which JVL has previously supplied motors.

To measure the effects of the waves on model installations, a large scanner is used. This scanner can be moved over the entire test basin. Using software developed by the University of Aalborg, 3-dimensional plots of the model installation can be made before and after the effects of waves. The scanner can also be used to map the contour of the model seabed.

The recently developed scanner moves on a carriage along a 12-metre long lattice girder which itself moves on rails to cover the entire 18 metre length of the test basin. The entire scanner installation weighs approximately 3000 kg. Movement of the scanner assembly on the lattice girder utilizes a JVL MAC141 integrated servo motor with RS232/485 and Pulse Direction module MAC00-B4. On the carriage itself, the scanner probe is moved up and down using a second MAC141 equipped with a Nano PLC module MAC00-R4. This motor is further equipped with brake MAB23 to maintain the probe in the required vertical position. Both motors use JVL's HTRG planetary gears, with gear ratios of 100:1 on the one and 40:1 on the other.

The forward and reverse movement of the lattice girder on rails is performed by MAC141 motors at each end that also use HTRG planetary gears. A gear ratio of 400:1 is used. The entire system is controlled via an RS232 bus.

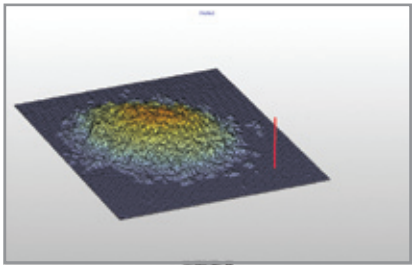
The scanner has been delivered to a hydraulic institute in Hanoi, Vietnam.

DHI opted for JVL's MAC motors because of their compact construction and the simple implementation of the entire control system provided by the MAC motors.

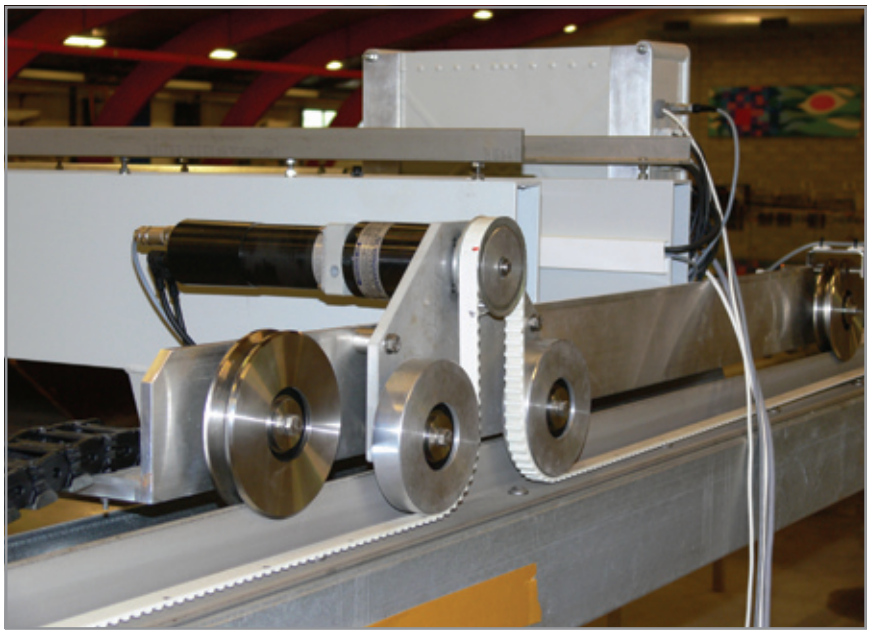
The assembled scanner in the test lab (without water)

Scanner carriage with motors, brake and gears

Stone aggregate pile



Plot of the aggregate pile



One of the MAC motors and gears used to move the lattice girder assembly

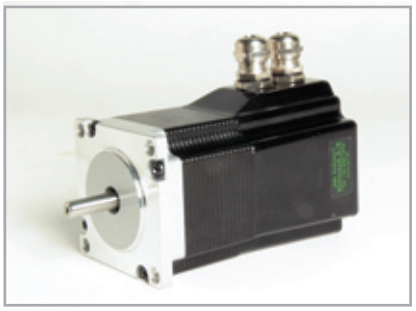
QuickStep in different versions

The QuickStep motors can be adapted to almost any application

JVL's QuickStep range of integrated step motors is available in two basic versions: an 'unintelligent' driver-version and a controller-version. Driver-versions of the motors are ordered with the required step resolution, operating current and voltage level for pulse/direction control, etc. The controller-versions on the other hand are freely programmable, offering the same user-friendly functionality of the MAC motor's nano-PLC module. While MAC servo motors equipped with the nano-PLC module have 8 DI + 4 DO + 1 AI, QuickStep motors offer 8 configurable I/Os – which can be freely selected as a DI (digital input), DO (digital output), or 5V Analogue Input.

Until now QuickStep motors have been available with a number of M12 connectors depending on the specific application. Now JVL can also supply QuickStep (type MIS231A8C1N075) with cable glands as a controller version. This model offers a significant price saving for very cost sensitive applications. Since the terminals are located on the side of the housing, this construction also gives the shortest possible length. For these models we can also supply standard 5m screened cables for power and I/O signals.

JVL's MacTalk software is used for MAC servo motors, QuickStep step motors and our SMC75 step motor controllers. MacTalk's well-known graphic interface for point-and-click programming now provides a total of 16 different command types, as well as Remarks and machine code. Many customers have praised MacTalk's user-friendliness which, even without prior knowledge, readily enables users to develop their own applications.



JVL member of ODVA and CAN

ODVA is an organisation that supports network technologies based on the Common Industrial Protocol (CIP™) — DeviceNet™, Ethernet/IP™, CIP Sync™ and CIP Safety™. JVL is a member of ODVA as the producer of MAC modules that support DeviceNet and because we are currently developing an Ethernet module. This gives us the right to use the C3 CIP Conformity Club mark. (www.odva.org).
CAN in Automation is a similar organisation that supports work with the CAN, CANopen and DeviceNet networks. JVL is similarly a member of this organisation to ensure our products' compliance with the latest requirements. (www.can-cia.org).

DeviceNet™ CANopen ODVA™ CiA

New low-cost step motor controller

Step Motor Controller SMC75 now also available in own housing with cable glands

JVL has developed a new step motor controller for OEM applications. Controller SMC75A1WA is shown here in a compact housing that includes the controller, driver and RS485 interface with option for CANopen and DeviceNet. A built-in nano-PLC can be programmed, and with 8 I/O the unit can be used as a stand-alone step motor controller.

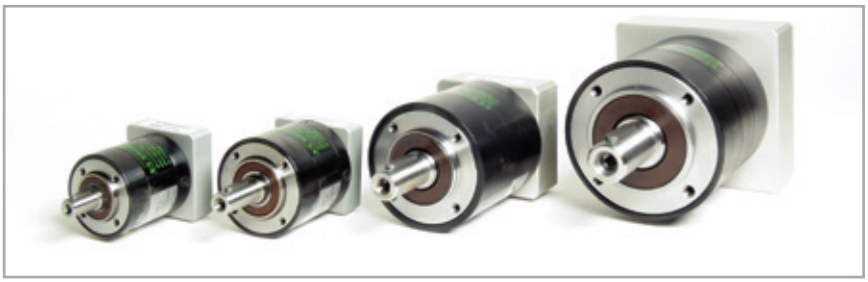
The price is kept low by using cable glands instead of more expensive M12 connectors. PG12 cable glands ensure a high IP protection and short length. Customer-specific connectors can also be supplied.
The Controller can be delivered with or without screened cables for I/O and power. An IP65 option is also available.

Large selection of own planetary gears

JVL is now launching a range of planetary gears for most applications

JVL Industri Elektronik has now introduced its own range of gears (type HTRG) for direct delivery to customers in Denmark and to our representatives and customers worldwide. We can supply a wide range of gears and gear ratios for use with our own motors (MAC, MIS, MST23x, MST34x, SGMAH, etc). Model HTRG05 for example is available with gear ratios of 3, 5, 9, 12, 20 and 100:1. Model HTRG06 offers gear ratios of 5, 9, 12, 36 and 100:1. HTRG08 offers ratios of 3, 5, 10, 12, 20, 36 and 100:1, while HTRG10 offers 20 and 100:1.

The range will be expanded in response to demand for other sizes, gear ratios and motor types.



New Employees

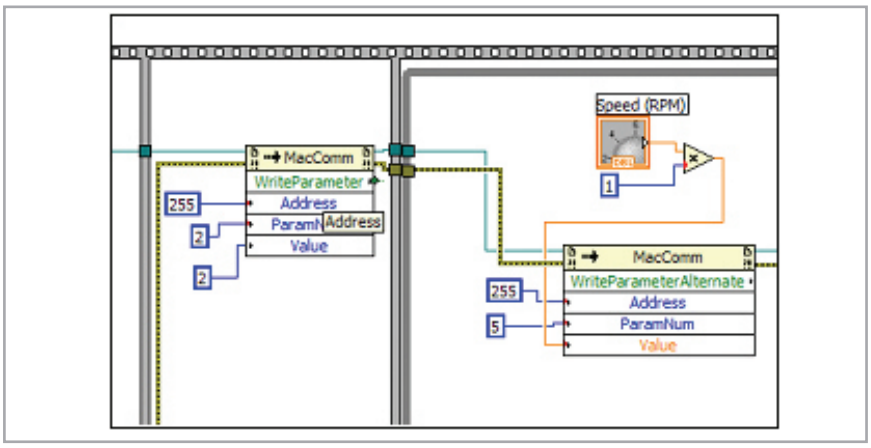
Per Carsten Rasmussen joined our R&D department last year. Per is working primarily in the fields of product documentation and quality assurance, as well as handling various product approvals such as UL. Per graduated as an electronics engineer in 1986 but has mostly been engaged in mechanical engineering tasks. He joins JVL with experience of working with pre-production and production procedures and product documentation, especially within the graphics industry. We welcome Per to our R&D team.

On the 1st May this year, **Hakim Chebbah** joined JVL and is also working in our R&D department. Hakim will be working with both the maintenance and new development of windows-based software and also embedded software, for example for in-house test systems. Hakim graduated as an electronics engineer from the Copenhagen University College of Engineering in 2001.

Hakim comes to JVL from a position in a company that develops machinery for the graphics industry. Here he developed electronics, windows and embedded software and worked with many other disciplines in machine development. We also welcome Hakim to our R&D team.

OCX Driver - makes programming easy

JVL has developed an OCX driver for MAC050-141, MAC800 and MISxxx for use in programming applications such as LabView, Excel, Visual Basic, Visual C++, Visual.Net, Delphi and Borland C++ Builder, etc. The new OCX driver makes it easy to build complex programs in a quick and easy way. JVL's website – www.jvl.dk – provides examples that make it even easier for users to begin programming their own applications.



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