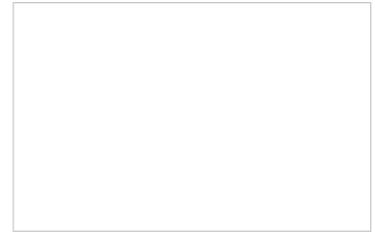


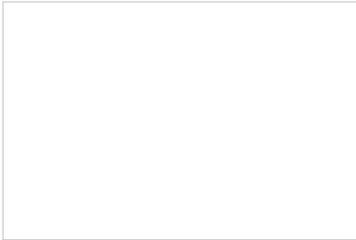
SPS IPC Drives: Motion control news

The automation trade fair in Nuremberg beating the previous exhibitors (1458) and visitor (56874) numbers offered a lot of recently developed solutions for drives, frequency inverters, motion control and positioning systems. Many of them provide CANopen connectivity with CiA 402 motion control profile support.

AS THE LAST YEARS, the most exhibitors of products with electric interfaces came from Germany and other European countries. All the important players in industrial automation were present. CANopen is in particular in smaller servo drives the dominating network, but also in other motion control application fields it is well established. As the CANopen profiles may also be used in Ethernet-based (e.g. Ethercat, Powerlink, Varan, and SafetyNet p) networks, some companies offered products running the CiA 402 CANopen device profile for drives and motion control on Ethernet.

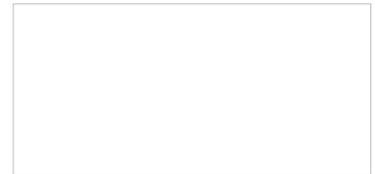


AMK Arnold Müller (Germany) offered the Amkasmart IX servo drives up to 5 kVA suited for modular machine and plant construction applications. The IP65-rated servo drives with STO (safe torque off) function support the CiA 402 CANopen profile for drives. The company is in principle changing from the CAN-based communication usage to Ethernet e.g. Ethercat, Varan and Sercos III.

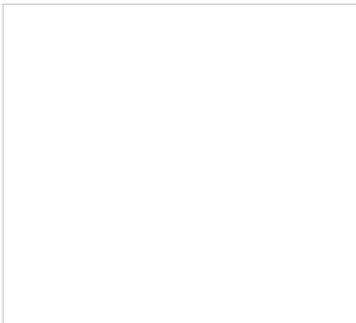


Aros Electronics (Sweden) presented two permanent magnet brushless motors with integrated drive electronics and encoder feedback. The CiA-402 supporting devices have rated torques of 2,4 Nm and 15 Nm (60 Nm peak). An application example of the latter motor is driving of the beams in a carpet weaving machine. The 40-years company provides customized industrial and mobile solutions using CANopen, DeviceNet and CAN Kingdom protocols.

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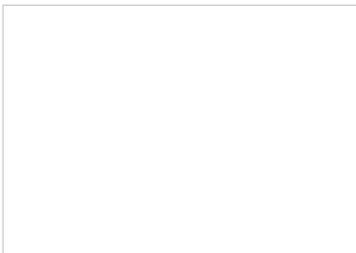
Compag Automation Systems (India) shown its BRL AC brushless servo motors, which may be used with CANopen drives by TDE Macno (Italy). The drives used with synchronous, linear, torque and reluctance motors are dedicated for motor powers from 0,76 kW to 37 kW and rated torques from 0,3 Nm to 100 Nm. Hall sensor and encoder feedback are available. The company also provides the CAN-capable Power motion controllers with CNC and PLC functions.



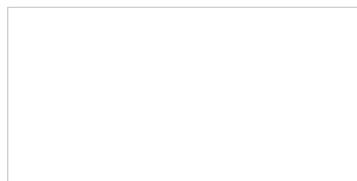
Copley Controls (USA) introduced the Xenus Plus XE2 and XP2 two-axis AC servo drives with CANopen interface according to the CiA 402 profile. Such operating modes as position, velocity, torque, camming and gearing are supported. The device with absolute encoder feedback includes up to 22/7 digital I/Os and 2/1 analog I/Os. An STO (safe torque off) function is available as well.



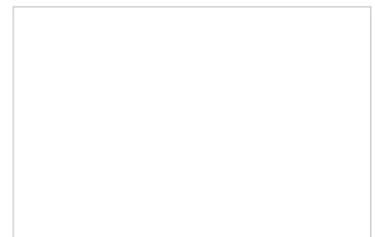
Delta Electronics (The Netherlands) presented its CANopen-capable ASDA-M servo drive system for up to three axes. The system may be combined with company's ECMA servo motors (e.g. ASDA-A2) supporting the CiA 402 CANopen drive profile and bit-rates up to 1 Mbit/s. The manufacturer also produces the AFE2000 brake resistor for feed the energy back into the power supply grid. Used in regenerative energy yield applications, it communicates via CANopen (CiA 301) with the according servo motors.



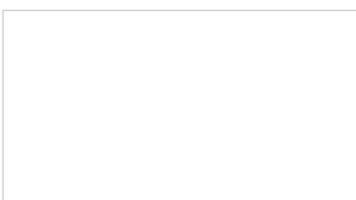
Elmo Motion Control (Israel) shown the Gold servo drives for up to 65 kW with CiA 402 profile support. The CANopen layer setting services (LSS) as defined in CiA 305 allow automatic node-ID and bit-rate setting. The modes of operation include cyclic position, velocity and current modes. It is possible to connect divers encoder and resolver feedback systems. The STO (safety torque off) function is supported as well.



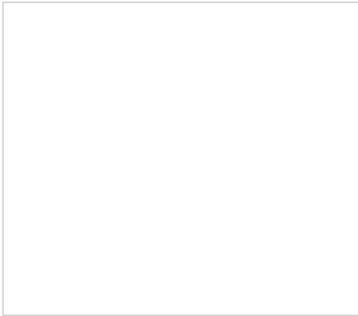
Engel Elektroantriebe (Germany) offered the HBI CANopen (CiA 402) integrated drives with encoder feedback, parking brake and planetary gear options. Company's CANopen-connectable DSV digital servo controllers for up to 770 W may be used with synchronous brushless or brushed DC motors. Configuration of both product series is possible via the EIA-232 interface using the Dserv PC-software.



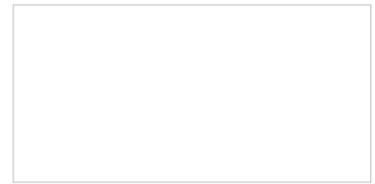
Femsan Elektrik Motorlari (Turkey) shown its Dynafem (5 Nm to 20 Nm) and Powerfem (14 Nm to 1000 Nm) brushless servo motors, which may be accordingly used with drives by TDE Macno (Italy) and DCD drives by LTI (Germany). The drives enable CANopen communication with the motors. Application fields include mobile cranes, diverse vehicle types, pumps, marine industry, etc.



Gefec-Neckar Antriebssysteme (Germany) launched the MQ 637 (45 Ncm and 151 W) and MQ 667 (75 Ncm and 228 W) BLDC motors with integrated controls, encoders and brakes. The 68-mm (diameter) motors with lengths of 82 mm and 112 mm communicate via CANopen using the CiA 402 motion control profile. The devices are protected up to IP65 class.



Georgii Kobold (Germany) introduced the KTY-F flat-design torque motors with rated torques from 6,5 Nm (1,2 A) to 50 Nm (4,8 A). The IP54-rated motors may be driven by company's KTC and KMC digital servo drives providing CANopen (CiA 402) connectivity. The company also produces digital frequency inverters and servo inverters.

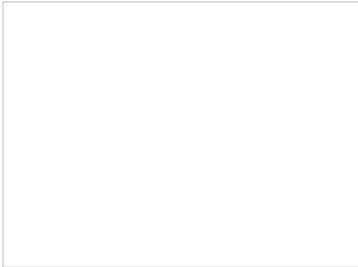


Halstrup-Walcher (Germany) presented the PSE 3xx positioning systems with CANopen communication capability. These include a BLDC motor with gearbox, controller as well as an absolute encoder and are available in hygienic design

to be deployed in food and clean-room applications. The manufacturer also offers the Hiperdrive HDA 30, 45, 70 positioning systems with a DeviceNet interface.

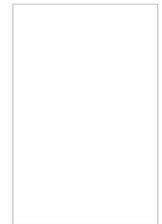


HDT (Italy) introduced the DG Fox 60 servo drive for up to 750-W brushless and brushed DC motors. Another innovation was the Tomcat 240 drive for brushless servo motors up to 2 kW. Both drives communicate via CANopen according to the CiA 402 specification and support profile position, velocity, torque, homing, and interpolated position operating modes. Hall sensors and encoder feedback are given.

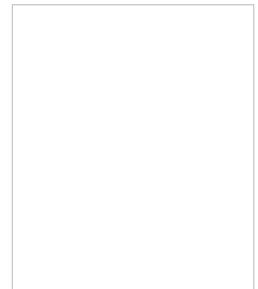


Higen Motors (Korea) offered the Higen Robocon motion controller for up to 32 axes of Ethercat-controlled drives. The CANopen-connectable drive with two CAN interfaces and 8/8 digital I/Os enables stand-alone operation in robot control and interpolation applications. The device is programmable via IEC 61131-3 software and

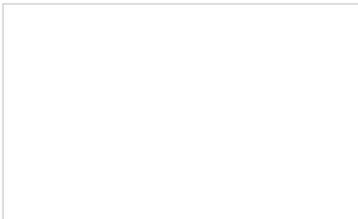
uses R3 Robot program language.



Invertex Drives (United Kingdom) shown the Optidrive P2 AC variable speed drives with standard CANopen-connectivity. Variants with IP20, IP55 and IP66 protection degree are available. The STO (safe torque off) function is supported. The drive may be used in mining, metal, processing, plastics, food and beverage as well as others industries.



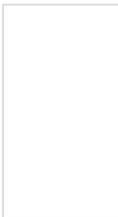
INVT (China) produces the Goodrive 300 vector control inverter series applicable with asynchronous and synchronous motors up to 500 kW for speed control (0 Hz to 400 Hz). It adopts a 32-bit DSP and offers a CANopen communication option. Nine/two digital I/Os and three/two analog I/Os are available. The IP20-protected devices with air-cooling provide built-in or external brake units.



Jenaer Antriebstechnik (Germany) offers the Ecovario 608 and 616 servo amplifiers for powers up to 10 kW. The devices for three-phase synchronous motors support the CiA 402 CANopen drive profile. The Ecospeed AC servo motor series extended by the 150C motor may be used with the Ecovario 616 drive. Also the Ecostep motors with integrated encoders may be controlled by integrated or separate CiA-402 drives.



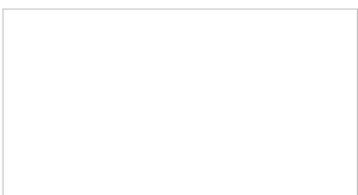
Lika Electronic (Italy) presented the Drivecod RD1A positioning unit with absolute encoder, brushless motor and diagnostic LEDs. The device with nominal torques from 1,2 Nm to 5 Nm offers a CANopen interface. It dimensions 59 mm x 112 mm x 125 mm, operates at temperatures from 0 °C to 60 °C and is IP65 protected. The manufacturer also produces diverse encoders e.g. for lift industries supporting the CiA 406 (encoder) and CiA 417 (lift) profiles.

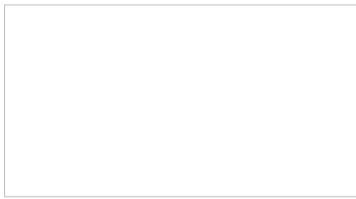


LS Industrial Systems (Korea) offered the S100 drive series with CANopen interface. Variants for one-phase from 0,4 kW to 2,2 kW and three-phase motors from 0,4 kW up to 22 kW are provided. The drives with IP66 protection class include a PLC function as well.



Märzhäuser Sensotech (Germany) offered the CAN-connectable Tango positioning control family. Tango Desktop controller as well as PCI-S and PCI-E cards usage allows control of up to four stepper motor axes. Tango Integrale is a 7,1-mm-high two-axes stepper motor driver board. The Tango Mini is a stepper motor controller with resolution of 819200 steps per revolution. The company also offers a 3-axes joystick to be used with Tango controllers.

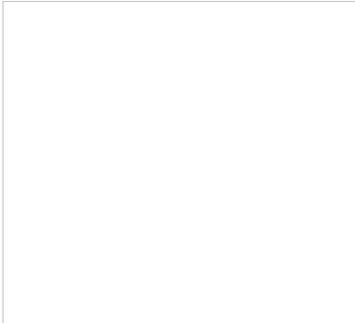




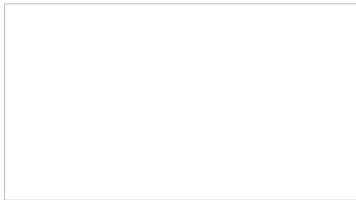
Metronix (Germany) introduced the ARS 2000 SE servo drives (0,5 kVA to 6 kVA) supporting the CiA 402 motion control profile. Integrated STO function meets the requirements of Category 4 / PL e according to ISO 13849-1 and SIL CL according to EN 62061. Control and configuration of the servo drive via the integrated Ethernet or USB interface is possible. A multi-function encoder interface is integrated.



Moons' Industries (China) presented the STM17C (0,48 Nm), STM23C (1,5 Nm) and STM24C (2,4 Nm) stepper motors with integrated control electronics. Offered CANopen interface complies with the CiA 402 drive profile. Profile position, profile velocity as well as homing operation modes are implemented. The CANopen Data Frame tool is used to verify and test the drive operation. Company's CANopen-connectable SV7 servo system is available for rating powers up to 235 W.

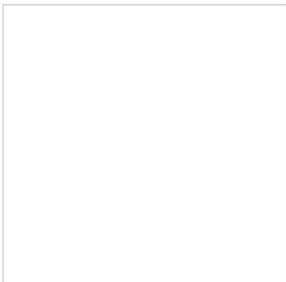
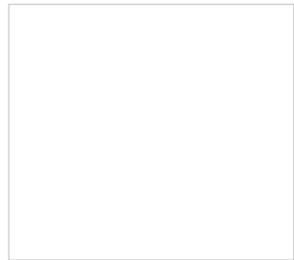


Motor Power Company (Italy) offered the CANopen-capable Lite Pro, Basic Pro and Flexi Pro drives for output powers respectively up to 0,4 kW, 3,8 kW and 8,8 kW. The Basic Pro series additionally supports the CiA 401 CANopen profile for I/O modules. The Core Pro motion controller is equipped with CANopen as well. Further, the CiA-402 supporting Duet and Duet Flexi integrated servo motors are provided.



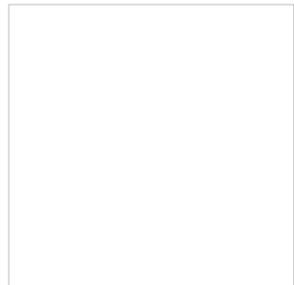
Ortlieb Präzisionssysteme (Germany) shown the Serac XH, KH and LH electric cylinders with stroke lengths up to 200 mm. For servo control the pre-parameterized Sevoone servo controllers by Lti Drives (Germany) with CANopen communication option may be used. These offer the STO (safe torque off) function and may be programmed according to IEC 61131.

Parker Hannifin (UK, Germany) presented CANopen-capable drive products. The Compax3M servo drives integrate safety functions (e.g. safety torque off, safety stop 1 and 2, safe operating stop etc.) allowing achieving Performance Level PL d or PL e according to EN ISO 13849-1. The AC30V series provide a modular AC variable speed drive solution (0,75 kW to 18,5 kW) for pump and fan control. The single cable servo drive system consisting of SME servo motors and TPD-M triple-axis servo drive requires one single cable connection for motor power and encoder feedback between servo motor and drive.

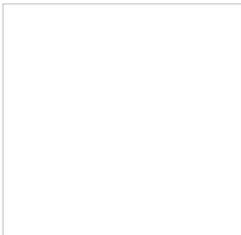
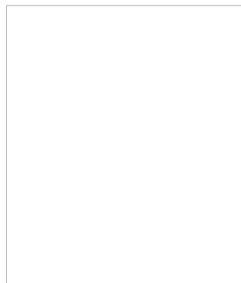


Promicon Systems (Germany) provided its Varimotion motion control system dedicated for control of several axes. The CANopen-capable system consists of a configurable master controller and servo drives suitable for AC servo motors, linear, torque, direct-driven and DC motors. The different drive versions are available for continuous currents up to 24 A. Safety torque off function (IEC 61508) is available.

Selema (Italy) presented the MiniEco Plus drive for brushless, linear, rotary torque and AC motors with rated current of 4 A. Introduced was the µEco compact drive dimensioning 185 mm x 82 mm x 27 mm. The devices support CANopen CiA 402 drive profile including positioning, velocity, homing, and interpolated operation modes. Two Receive and two Transmit PDOs with variable mapping as well as cyclic and asynchronous trigger modes are offered.

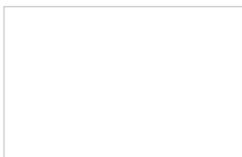
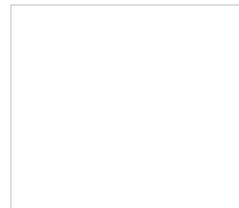


Sensor-Technik Wiedemann (Germany) has extended the PowerMela hybrid drive family (20 kW to 300 kWv) with an 80-kW motor-generator. The CAN-controllable system with 250 Nm of continuous torque is a diesel-electric drive designed for use in auxiliary systems as well as axle and single wheel drives. A battery can be included to enable recovery and to store excess system energy.



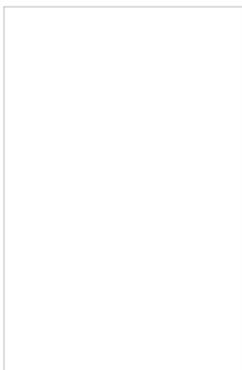
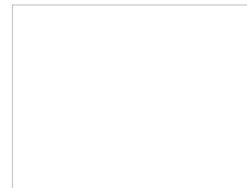
Serad (France) offered the MPC motion controller with two CANopen interfaces running at up to 1 Mbit/s. The included PLC functionality may be programmed using the IEC 61131-3 software Motion Studio. The controller was applied in a press transfer machine by a French automotive manufacturer for communication between remote I/Os and the Motoman robot. The CANopen-connectable MD, IMD and IMDC drive series were also presented.

Severn (England) is a European partner of RXPE (China), which offers CAN-capable variable frequency drives and frequency converters for high-voltage (up to 10 kV) applications. Severn itself is manufacturing the MFS 2000 multi frequency starters used for motor control as well as soft start and stop of medium-voltage motors under load. The starters use CAN network for communication with remote I/Os.



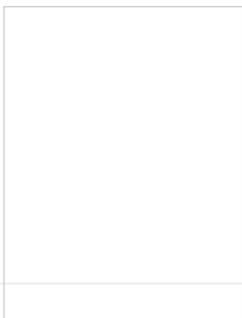
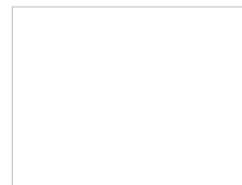
Sprint Electric (United Kingdom) launched the PLX digital DC motor drives for 5 kW up to 980 kW (2250 A). The drives provide CANopen and DeviceNet communication options. The Ethernet-based Drive.web control system includes graphical tools for diagnostics and configuration of the networked drives, locally or via Internet. Company's PL DC drives support DeviceNet connectivity.

Stegmaier-Haupt (Germany) shown the 638 AC-motor servo drive for current, velocity and position control. It offers CAN layer-2 and DeviceNet connectivity as well as CNC and PLC functions. The battery-based CAN-capable Bamobil-D3 controller is dedicated for current and velocity regulation of brushless DC motors. The company also distributes products from Gunda Electronic (Germany) e.g. the CAN-enabled Minipac (1-axis) and Bigpac (4-axes) stepper motor controllers.



TAE Antriebstechnik (Germany) produces the U-Drive universal drive series for powers from 2,2 kW to 300 kW. The devices dedicated for driving of BLDC, AC synchronous, AC asynchronous, torque and linear motors provide CANopen and DeviceNet interfaces. Startup of the control is simplified with Keypad PG 4000 HMI, Smartcard with customized configuration, and the U-Drive-Manager PC software for Windows 2000/XP.

TEM Electric Motors (Italy) introduced the Falcon DF1 digital servo drive series (3 A to 42 A rated current) with CANopen communication compliant to the CiA 402 drive profile. The drives for one-phase and three-phase AC motors allow for current, speed and position control. Position interpolation and electronic cam functionality are available. Manufacturer's BTS (up to 0,5 kW) and BTS (up to 1,25 W) AC motor series may be used with the DF1 drive.



Trio Motion (United Kingdom) presented beside its MC403, MC405 and MC464 stand-alone motion coordinators, the Euro404 and Euro408 motion coordinators in PCI format for control of up to eight axes. The devices are able to communicate via CAN using CANopen, DeviceNet, Triocan I/O (proprietary) or user-programmable higher-layer protocols. Company's I/O modules with bit-rates up to 500 kbit/s support the CiA 401 profile for I/O modules.