MotorNet System - MnS: multi-axes control system for industrial machinery, based on: SERCOS interface™ / CAN OPEN interface™ field bus; independent control of more than 20 axes; brushless servomotors; I/O field modules; optical fibre wiring; HMI interface with SCADA system. This system allows to effectively and efficiently face all the current market challenges within the industrial automation sector, ensuring:

- Reduction of the wiring costs;
- High immunity from electromagnetic interferences;
- Modular construction of the finished product;
- Better control accuracy, compared to that provided by an analog interface system;
- Possibility to control a progressively growing number of servo-motors.

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UL / CSA certified
The MotorNet System - MnS - proves to be a formula for success. The basics of the MnS are: the very quick SERCOS interface™/ CANOPEN interface™ field bus architecture in optical fibre and the COSMOS 2000 servo-drivers for brushless servo-motors, allowing more than 20 brushless servomotors and an unbelievable number of analog/digital I/O to be easily controlled. Thanks to their power and flexibility, the two industrial PC (MARTS and POSYC) reliably and efficiently run all of your process control and man-machine interface applications. Among the several applications available, SMITEC suggests MATROK-PRO, a powerful “softplc” specialized in motion control and c/c++/ IEC 1131 programmable, and JADA, a flexible SCADA program specifically created to maximize the productivity in the development of multilingual and plant-independent operator interfaces.

A complete range of hardware and software tools allowing to get ahead of the traditional industrial automation standards and to implement a field control system, where flexible brushless servo-motors are being easily utilized. The complex wiring, the nightmare of the lacking space in the electrical cabinet racks and the electromagnetic interferences are therefore nothing more than a distant memory.

In such a way, it is easy to win the challenge of supplying user-friendly equipment, promptly adaptable to meet all the different customer’s requirements. This equipment is designed and manufactured by a company that focused on the industrial automation, considering it as the primary goal to be achieved and turning it into its strong and salient point. In fact, the MotorNet System was developed in 1998 by SMI S.p.A., a world-class leader in the manufacture of the secondary...
Motorsystem MnS

SMITEC suggests MATROK-PRO, a powerful "softplc". This equipment is designed and manufactured by a specialized in motion systems. A world-class leader in the manufacture of the secondary systems was developed in 1998 by SMITEC, operator interfaces. An extensive experience allowed (and is still allowing) to develop both simple and complex applications, to fulfill the many different requirements in the control of industrial machinery.

The MnS is based on SERCOS interface™ field BUS with 16 Mbaud or "CAN OPEN" interface™, ensuring high-performances in the control of machines equipped with a high/medium number of axes. Both the COSMOS 2000 servo-drives and the dGATE/aGATE digital and analog I/O field modules can be connected to the MnS.

The COSMOS 2000 servo-driver is a digital driver for brushless motors, equipped with a SERCOS interface™ in optical fibre (up to 16 Mbaud) "CAN OPEN" interface™; it is characterized by a power supply ranging from 200 V to 480 V and by a high rated current (up to 21 A).

The use of SERCOS interface allowed to do away with the complexity of the traditional analog interface, based on speed reference values and position feed-back, providing a wide range of advantages in terms of costs and interferences immunity. Besides driving its respective brushless motor, the driver can also control general purpose digital and analog I/O signals, thus contributing to further increase the system modularity.

The I/O field modules are equipped with a microprocessor and are available in two different versions: a digital one (dGate) with 16 I/O, individually programmable as input or output, and an analog one (aGate 16 IN and aGate PWM). All of the versions have IP65 protection enclosures and can be directly used on board the machine, thus minimizing the distance between each sensor/actuator and its controller and consequently improving the system modularity.

The process control, and therefore the control of the machine I/O and brushless servo-motors, is effected through MARTS and MATROK-PRO.

MARTS can be configured in accordance with the number of axes and I/O field modules of the machine. A SERCOS interface™ card can control up to 25 peripheral units; considering that the number of SERCOS interface™ cards can be increased up to four (4), it follows that it is possible to control a total number of 100 peripheral units (both digital servo-drivers controlling their "brushless" motors and I/O field modules).

MARTS is a process control system, equipped with a Pentium III micro-processor and a solid state mass memory. It can be connected to SCADA systems either by means of a high-speed serial line (in optical fibre, if necessary) or by an ethernet connection.

MATROK-PRO is a "softplc" specifically developed for applications involving the use of servo-motors. It is based on a "multi-tasking", "hard-realtime" operating system (minimal cycle: 1 ms); besides the I/O control, MATROK-PRO offers special software modules for the control of the electronic axes. These software modules allow to define and set up, by means of simple parameters, the motion profile of each single kinematic motion occurring on the machine. In order to ensure the maximum performance, MATROK-PRO can be programmed in c/c++/IEC 1131 language.

MATROK-PRO can communicate with SCADA systems via MODBUS-RTU protocol, if necessary, an OPC gateway software (that can be run on POSYC) is available.

POSYC and JADA are used to develop operator interfaces, to control the plant operating parameters and to integrate the MnS at the factory level. POSYC is an industrial PC equipped with a colour LCD touch screen, Pentium III micro-processors, a hard disk and a solid state mass memory. It is compatible with the most common operating systems, MS Windows and Linux, and it is supplied with a wide range of communication interfaces: RS232/RS485 serial interfaces, USB and ethernet interfaces. Being equipped with both the PC/104 and the PCI bus, POSYC features quite a high number of expansion slots. This makes possible to use a modem and, therefore, to control the facility by means of a tele-service system.

JADA is a SCADA program controlling the plant multilingual operator interface, storing all the plant operating parameters in the mass memory and integrating the MnS at the factory level via OPC, MODBUS/TPC and MODBUS-RTU protocols or by means of other industrial protocols. In addition, JADA offers special modules for the trending/storing of the operating data and for the control of the plant's scheduled maintenance.

The graphic design of the operator interface is developed in a visual mode and is based on a state-of-the-art combined use of media (images, drawings, videos). In addition, the automatic control of the screen resolution and of a centralized message dictionary allows to highly reduce the graphic design carrying out times.

In addition to this, the availability of a unified database containing the parameters of MARTS application with those of the SCADA program, allows to enter the data exchange lists only once, thus increasing the application reliability and ensuring extensive time-savings.

Therefore, the combined use of all of the MnS components allows to implement industrial automation and control systems characterized by high performance levels, modularity, standardization, large flexibility to meet all the current and future requirements of the customer.