**sigmaPAC®**

Programmable Automation Controller

Distributed Automation Solution with Fieldbus

- Advanced PID control
- Logic and batch control
- Open connectivity to Most Major Fieldbuses
- IEC 61131-3 Programming System

Serial interface

Fieldbus

Ethernet

ISO 9001 Certified
Automation of machines and systems increasingly requires solutions meeting the following needs:

- Modularity
- Scalability
- Geographical and functional distribution
- Communication standardization
- Compliance with international standards
- Reduction in hierarchical levels
- Easier mounting and cabling
- Simplified installation and maintenance.

ASCON S.p.A., a leading Italian manufacturer in the design and production of industrial automation instruments and systems, supported by its strong presence with OEM and System Integrators and its expertise and long history of innovative technologies, offers SigmaPAC, a powerful and innovative complete control system. Due to its exceptional modularity and flexibility features, SigmaPAC may be used in the most diverse applications.

**One system... many solutions**

SigmaPAC offers a vast range of possible configurations:

- A wide variety of I/O modules with autonomous functions and integrated bus interface
- An ability to carry out process control functions and constant, logical and sequential controls
- Personalized libraries of Function Blocks for specific application sectors
- Interface with the most common buses in industrial environments (Modbus, CAN, Profibus, DeviceNet, Ethernet, etc.)
- DIN-rail mounting with removable screw or spring terminals
- Possibility to develop centralized or distributed solutions without modifying or adding components.

**Cutting-edge technology**

Through the use of the most innovative hardware and software technologies, SigmaPAC allows for even the most demanding control solutions to be developed, integrating different tasks from advanced regulation functions to the management of automation sequences. Communication standardization and integration are guaranteed through the use of widely accepted industry standards - such as fieldbuses, the Ethernet network and serial communications with standard protocols.

SigmaPAC offers a complete development environment, based on languages complying with IEC 61131-3 standards, which guarantee the ease of development and maintenance of automation solutions.
The first low-cost PAC
SigmaPAC belongs to a new generation of programmable controllers, equipped with great processing capacity, known as PAC (Programmable Automation Controller), and is characterized by:

• “a multi-function platform”: equipped with control functions (PID, Auto/Man station management, Autotuning,…) for various types of variables (temperature, pressure, range, level, position,…), logical and sequential functions, process calculations

• “a single development environment” to implement multi-structure functions

• “instruments aimed at designing software architectures” to allow program flows to be defined and multiple parallel tasks to be carried out on the same CPU

• “modular and open architecture” both for industrial applications in the manufacturing industry and for process system automation units

• “maximum connectivity” guaranteed by various interface ports: serial RS 232, 485, Ethernet, fieldbus.

<table>
<thead>
<tr>
<th>Features</th>
<th>PLC</th>
<th>SigmaPAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dedicated analogue measurement and control</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>Custom and complex example algorithms</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>Control algorithms: Advanced PID</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>Floating point processor</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>Complete programming tool</td>
<td>Optional</td>
<td>Yes</td>
</tr>
<tr>
<td>Ethernet and web connectivity</td>
<td>Optional</td>
<td>Yes</td>
</tr>
<tr>
<td>Digital logic</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Real time OS</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Industrial temperature range</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Shock and vibration resistant</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
**SigmaPAC is here!**
One of the characteristics of SigmaPAC is its architecture which enables the complete distribution of signal interface units. The adoption of a standard fieldbus as its system bus allows standard third party devices (transducers, actuators and operator interfaces) to be connected and controlled directly by the SigmaPAC Central Unit.

**Centralized or distributed... for us it is all the same**
Through the adoption of a high-efficiency standard protocol, the performance of SigmaPAC is not “penalized” if the architecture required is distributed. The I/O modules may be located directly next to the measurement or control points without the use of further interface devices.

**Geographical and functional distribution**
The onboard intelligence residing in each module allows basic processing to be distributed, and relieves the CPU from trivial repetitive operations. Power-up and power-down functions allow the state of the output variables to be determined upon start-up or in the event of an interruption.

**Industries and Applications**
**Plastic and Rubber:** injection, extrusion, hot-runners
**Packaging:** thermowelding, thermoforming

**Food:** dairy products, food packaging, bottling, dried and fresh pasta, oven products, cereal silos, preserving-ripening stores

**Vehicles:** engine testing counters, painting plants, plate welding plants

**Ceramic and Brick Works:** continuous furnaces, intermittent furnaces, driers
Distributed... the same solution!

Synchronized... islands of automation
The automation of part of the system or machines may be managed independently by a CPU connected to a number of I/O modules. It is possible to use secondary communication ports available on the CPU to exchange synchronism data or messages with other units in different areas. To this end, it is possible to choose whether to use the serial ports RS232/485 with Modbus RTU or ASCII protocol (the Master/Slave mode may be configured on each port), or to use other fieldbuses such as Profibus DP, Modbus TCP or CANopen.

“Single click” connection
The advantage in terms of reduced cable and cabling needs, as well as the indirect reduction in engineering activities required by the system or automated machine, is significant. The CPU and the I/O modules are connected by standard CAT5 Ethernet cables.

Metal Works: blast furnaces, thermal treatment furnaces
Glass: blast furnaces; furnaces for the treatment of flat, hollow, curved glass
Chemistry and Pharmaceutics: Fine chemistry, pharmaceutics, cosmetics, paints and enamels
Power: boilers, burners

Industrial Air Conditioning and Refrigeration: climatic chambers, chillers
Shipyards: hull automation
Water Treatment: waste waters, primary waters, semi-conductors.
Standard IEC 61131-3 programming
The OpenPCS programming environment allows applications to be created in the 6 programming languages that comply with international standard IEC 61131-3 (Instruction List, Structured Text, Sequential Function Chart, Function Block Diagram, Continuous Function Chart and Ladder Diagram).

ASCON Automation Suite
The multitasking programming environment allows the project to be split into different tasks, executed sequentially or on the basis of a time cycle. The variable declaration window guides users towards structured programming. The 5 language editors aid in the correct execution of the application, automatically highlighting the keywords in the textual languages, and allow the function menus to be accessed rapidly. The diagnostics window allows any errors to be immediately identified during the project compilation phase. Powerful and complete online debugging tools and useful off-line simulation allow the code to be verified from a functional point of view. Furthermore, the server tool integrated in OpenPCS (with name OPC) permits immediate connections with standard third party SCADA software. Project management is facilitated by integrating documentation files in various formats in the specific Project-browser folder.
Vast function libraries... to aid programming
A complete set of libraries contain numerous function blocks for rapid and effective achievement of control and sequence routines.

Ascon Control Library
- PID with advanced functions
- Automatic/Manual output
- Autotuning function
- Heat/Cool algorithms (with overlap)

Ascon Process Control Library
- SetPoint programmer
- F Calculation for sterilization process
- Simplified reading/writing for network Operator Panels
- Moving average calculation
- Function block aimed at Modbus RTU and TCP communications
- Functions for accessing the real time clock
- Functions for setting the Watchdog and the Wake Up Alarm
- ...

Ascon I/O Library
Includes Function Blocks aimed at configuring, exchanging data and activating advanced functions in the I/O modules.

Numerous programming examples ... to speed up development
Ascon offers numerous application examples such as boiler control, autoclaves, furnaces, plastic processing, etc.
**Open connectivity**
The CPU integrates different interface ports with standard communications protocol:

**CANopen port**
This port interfaces I/O modules and other CANopen devices like Operator Panels, Inverters, Motors, Valves,…

**Ethernet port**
Primarily used for:
• CPU programming with OpenPCS
• HMI connection via the commonly used Modbus TCP protocol
• The Unit configuration and the way to access the System files (configuration, applications, IEC61131, retentive data etc.).

**Serial RS 232**
Can be used in alternative to the Ethernet port for:
• Setting up the CPU
• Ethernet port configuration
• Setting up the CANopen port parameters
• Serial RS232+RS485 with Modbus RTU protocol (Master or Slave software configurable)
• ASCII protocol.

**Optional communications ports**
Every CPU can be equipped with optional ports and fieldbus to interface other systems:
• Serial RS232+RS485 with Modbus RTU protocol (Master or Slave software configurable). Operator Panels, SCADA or external devices can be connected
• Profibus DP slave for PLCs or Operator Panels
• ASCII to interface modems, printers, barcode reader, controllers etc.
CANopen is a CAN-based higher layer protocol. It was developed as a standardized embedded network with highly flexible configuration capabilities. CANopen was designed for motion-oriented machine control networks, such as handling systems. Presently, it is used in many different fields, such as industrial automation, medical equipment, off-road vehicles, maritime electronics, public transportation, building automation, etc.

Profiles
Standardized profiles (device, interface and application profiles) simplify the system designer job of integrating a CANopen network system. Off-the-shelf devices, tools, and protocol stacks are widely available at reasonable prices. For system designers, it is very important to reuse application software. This requires not only the communication compatibility but also the interoperability and interchangeability of devices. CANopen is flexible and open enough to enable manufacturer-specific functionality in devices, which can be added to the generic functionality described in the profiles.

Messages
CANopen relieves the developer from dealing with CAN-specific details such as bit-timing and implementation-specific functions. It provides standardized communication objects for real-time data (Process Data Objects, PDO), configuration data (Service Data Objects, SDO), and special functions (Time Stamp, Sync message, and Emergency message) as well as network management data (Boot-up message, NMT message, and Error Control). Message architectures can be implemented according to different models: master-slave, client-server and producer-consumer. Double-ended signals are used for data transmission at different baud rates (up to 1 Mb), depending on the length of the network. CANopen takes care of error detection and diagnostic services.

Automation Network
Ascon Spa is part of Automation Network, a business-to-business platform that associates the Companies that use OpenPCS IEC61131-3 software integrated to their products. This allows all members to complement their range of products with compatible products from other members. This, in turn, allows the members’ products to be offered on markets that were previously not accessible to individual companies. In addition, every company has access to a complete range of products in its local market from the Automation Network Companies, which in turn enables successful competition against the products of a full-line major supplier. There are already more than twenty ‘Automation Network’ member companies, and these are convinced that the future lies in a new, synergistic business model matching typical component suppliers with service providers in a network of independent companies capable of offering a broader global spectrum of solutions and products to their local customers. Members are from Italy, Sweden, France, Switzerland, Germany, Austria, USA, Canada, China and Taiwan.
sigmaPAC®
All you need

CPU
Programmable Automation Controller IEC 61131-3 compliant.

I/O Modules
Wide range of modules for analogue, digital, relay input/output signals.

Ascon Automation Suite
Complete programming environment according IEC 61131-3 standard with Ascon Function Libraries.

Operator Panels
Colour and monochrome touch screen panels for local HMI with different sizes.

Accessories
AutoLink
Standard SCADA software for local and remote HMI with trends, logs, alarms, etc...
Power supply
Various sizes available.
Additional terminal blocks
To make local cabling easier.
CANopen RJ45 cables
For a “single click” connection of network devices.
Termination connectors
For CANopen network termination.
## CPU

The CPU offers a high degree of flexibility. It can function as a slave device on a Modbus RTU (also master), Modbus TCP, CANopen, Profibus network and act as CANopen master on the underlying CANopen system (I/O modules and third party devices). Thus the CPU is the ideal device for modular systems with distributed control architecture. With integrated industry standard open communications, the CPU makes it possible to easily communicate with decentralized I/O devices or other PLCs.

### Programming and Supervision

The CPU comes equipped with OpenPCS software including drivers for Ethernet or serial interface for an unlimited number of installations within the factory buildings. Ethernet is used for configure, programming and supervisory functions. OpenPCS running on a PC can be connected through the Ethernet port to download the developed project and debug the program online.

### CANopen Configuration

The CANopen network may be set up in one of two ways:

- Ascon I/O Library
- Standard CANopen Configuration software.

In both cases, all slave settings are stored in the non-volatile memory of the CPU. When the CPU is started, all slave nodes are automatically configured.

### Integrated Features

The real time Operating System manages task scheduling and event handling. Special functions, such as Watchdog or Wake Up alarms, are available to control the correct functionality of a SigmaPAC system, and can be used by external devices for security purposes.

### Characteristics

<table>
<thead>
<tr>
<th>Processor</th>
<th>32 bit processor, ARM architecture</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4 MB Memory Flash</td>
</tr>
<tr>
<td></td>
<td>16 MB SDRAM</td>
</tr>
<tr>
<td>Default interfaces</td>
<td>X0 RS485</td>
</tr>
<tr>
<td></td>
<td>X1 RS232 (USB optional)</td>
</tr>
<tr>
<td></td>
<td>X2 Ethernet 10baseT port</td>
</tr>
<tr>
<td></td>
<td>X3 RS232</td>
</tr>
<tr>
<td></td>
<td>X4 RS485</td>
</tr>
<tr>
<td>On board I/O</td>
<td>Configurable alarm relay digital output</td>
</tr>
<tr>
<td></td>
<td>Watchdog and Wake Up digital output</td>
</tr>
<tr>
<td></td>
<td>One Digital input available</td>
</tr>
<tr>
<td>Communications protocols</td>
<td>CANopen Master</td>
</tr>
<tr>
<td></td>
<td>CANopen Slave (optional)</td>
</tr>
<tr>
<td></td>
<td>Modbus RTU Slave</td>
</tr>
<tr>
<td></td>
<td>Modbus RTU Master</td>
</tr>
<tr>
<td></td>
<td>Modbus TCP Server</td>
</tr>
<tr>
<td></td>
<td>Profibus DP</td>
</tr>
<tr>
<td></td>
<td>ASCII</td>
</tr>
</tbody>
</table>

### Dimensions

![Dimensions Diagram]

### Features

#### Electrical

- **Power Supply**: 24Vdc nominal (min 18V, max. 30V)

#### Environmental

- **Operating temperature**: 0...+55°C standard
- **Storage temperature**: -20...+85°C
- **Relative humidity**: 5...95%, non condensing
- **Vibration resistance**: IEC 60068-2-6
- **Shock resistance**: IEC 60068-2-27

#### General

- **Mounting**: on DIN rail, vertical, free air
- **Protection degree**: IP20
- **CE Marking**: EN 50081-2, EN 50082-2, EN 61010

### SigmaPAC

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU-02 0010</td>
<td>4MB flash, 16MB SDRAM, Ethernet 10T port, CANopen RJ45 port, RS232 RJ45 port</td>
</tr>
<tr>
<td>CU-02 0110</td>
<td>4MB flash, 16MB SDRAM, Ethernet 10T port, CANopen RJ45 port, RS232 USB port</td>
</tr>
<tr>
<td>CU-02 5010</td>
<td>4MB flash, 16MB SDRAM, Ethernet 10T port, CANopen RJ45 port, RS232 RJ45 port, + 2 Serial (DB9 ports): RS232, RS485</td>
</tr>
<tr>
<td>CU-02 5110</td>
<td>4MB flash, 16MB SDRAM, Ethernet 10T port, CANopen RJ45 port, RS232 USB port, + 2 Serial (DB9 ports): RS232, RS485</td>
</tr>
<tr>
<td>CU-02 2010</td>
<td>4MB flash, 16MB SDRAM, Ethernet 10T port, CANopen RJ45 port, RS232 RJ45 port, + Profibus DP (DB9 port)</td>
</tr>
<tr>
<td>CU-02 2110</td>
<td>4MB flash, 16MB SDRAM, Ethernet 10T port, CANopen RJ45 port, RS232 USB port, + Profibus DP (DB9 port)</td>
</tr>
</tbody>
</table>
### Analogue modules

<table>
<thead>
<tr>
<th>Model</th>
<th>Ch.s</th>
<th>Inputs</th>
<th>Outputs</th>
<th>Resolution class</th>
<th>Isolation class</th>
<th>Accuracy</th>
<th>Acq. time</th>
<th>Functions</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>AI-02UI</td>
<td>2</td>
<td>Universal: RTD, TC, mA, mV, V, Potentiometer</td>
<td>16 bit</td>
<td>2500 V</td>
<td>0.1%</td>
<td>20 ms</td>
<td>Linearisation, Scaling, Engineering Units Limits, Autozare, Autozero</td>
<td>Isolation between the two inputs, High accuracy, High Speed</td>
<td></td>
</tr>
<tr>
<td>AI-08TC</td>
<td>8</td>
<td>TC, mV</td>
<td>16 bit</td>
<td>800 V</td>
<td>0.1%</td>
<td>60 ms</td>
<td>Linearisation,Scaling,Engineering Units Limits</td>
<td>Differential inputs</td>
<td></td>
</tr>
<tr>
<td>AI-04RT</td>
<td>4</td>
<td>RTD, TC, mV</td>
<td>16 bit</td>
<td>800 V</td>
<td>0.1%</td>
<td>120 ms</td>
<td>Linearisation,Scaling,Engineering Units Limits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AI-08HL</td>
<td>8</td>
<td>mA, V</td>
<td>16 bit</td>
<td>800 V</td>
<td>0.1%</td>
<td>10 ms</td>
<td>Limits, Offset, scaling</td>
<td>Fast acquisition</td>
<td></td>
</tr>
<tr>
<td>AI-08DP</td>
<td>8</td>
<td>mA, V Dual Polarity</td>
<td>16 bit</td>
<td>800 V</td>
<td>0.1%</td>
<td>10 ms</td>
<td>Limits, Offset, scaling</td>
<td>Fast acquisition</td>
<td></td>
</tr>
<tr>
<td>AO-08HL</td>
<td>8</td>
<td>mA, V</td>
<td>16 bit</td>
<td>800 V</td>
<td>0.1%</td>
<td>20 ms</td>
<td>Limits, Offset, scaling</td>
<td>High accuracy, High Speed</td>
<td></td>
</tr>
<tr>
<td>AO-08DP</td>
<td>8</td>
<td>mA, V Dual Polarity</td>
<td>16 bit</td>
<td>800 V</td>
<td>0.1%</td>
<td>20 ms</td>
<td>Limits, Offset, scaling</td>
<td>High accuracy, High Speed</td>
<td></td>
</tr>
</tbody>
</table>

**Remote I/O modules for effective distributed automation**

Each module has embedded fieldbus interface and power supply: therefore the modules can be distributed along the plant or on board of machines, in order to reduce engineering, mounting and wiring costs.

**Multifunction modules for high flexibility**

Through software configuration, sigma due® I/O modules can be used for different purposes. For example, a module can simultaneously count frequency inputs, read inputs status or activate the digital outputs to generate PWM outputs.

Some sigma due® modules have universal analogue inputs which can be configured for various sensor types. The availability of 2, 8, 16 and 32-channel modules provides great flexibility, fitting many different applications.

**Processing capability on board**

The embedded microprocessor allows local signal conditioning and data handling, such as linearisations, data scaling, engineering units conversion, alarm handling, etc. . This relieves the CPU from a considerable load of computing power, thus improving performance and bus efficiency.

**High performance**

Accuracy class: 0.1% and 16 bit resolution for analogue I/O. Analogue sampling: from 5ms max. total conversion time. Transfer of input data on network: 5ms max. for all I/O.

**Easy installation and Quick Wiring**

- Bus Connection: two RJ45 connectors on each module for fast hot swap
- Removable terminal block plugs
- Screw or spring clamp type plugs
- Additional Terminal Block available to make an easier wiring of field signals can be easily added to each module.

**Fieldbus technology**

- Built-in fieldbus interface for CANopen.

CANopen is successfully employed in many industrial control systems: the very flexible applications layer and many optional functionalities perfectly match network designer needs.
for effective distributed automation

### LED name Status Meaning

**RUN**
- **ON** Blinking Pre-operational (CANopen)
- **OFF** Device in RESET state
- **ON** Blinking Init and DI/AG running
- **OFF** Module OK and ready

**ERR**
- **ON** Diagnostic Error
- **OFF** Module OK and ready

**ST**
- **ON** Baud rate setting
- **OFF** Module Power Supply ON

**PWR**
- **ON** Module Power Supply ON
- **OFF** Module Power Supply OFF

### Common Features

**Electrical**
- **Power Supply:** 24 Vdc nominal (min 18 V, max. 30 V)
- **Three way isolation:** I/O to Logic - Logic to Fieldbus
- **Power Supply to all circuits**

**Environmental**
- **Operating temperature:** -10…+65°C standard
- **Storage temperature:** -20…+70°C extended

**Shock (3 axes):** 10...57 Hz, 0.0375 mm/57...150 Hz, 0.5 G

**General**
- **Mounting:** on DIN rail, vertical, free air
- **Protection degree:** IP20
- **CE Marking:** EN 50081-2, EN 50082-2, EN 61010

### Dimensions

#### I/O modules

<table>
<thead>
<tr>
<th>Single size</th>
<th>Double size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal block</td>
<td>Terminal block</td>
</tr>
</tbody>
</table>

#### Plug clamps

- Effective distributed automation

### Digital modules

<table>
<thead>
<tr>
<th>Model</th>
<th>Channels</th>
<th>Size</th>
<th>Input Voltage</th>
<th>Output Voltage</th>
<th>Output Current</th>
<th>Isolation Class</th>
<th>Counters</th>
<th>Functions</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>DI-16LV</td>
<td>16</td>
<td>Single</td>
<td>24 Vdc</td>
<td>–</td>
<td>800 V</td>
<td></td>
<td></td>
<td></td>
<td>Optoisolated Sink (PNP)</td>
</tr>
<tr>
<td>DI-16HV</td>
<td>16</td>
<td>Single</td>
<td>115 Vac</td>
<td>–</td>
<td>2500 V</td>
<td></td>
<td></td>
<td></td>
<td>Optoisolated</td>
</tr>
<tr>
<td>DI-32LV</td>
<td>32</td>
<td>Double</td>
<td>24 Vdc</td>
<td>–</td>
<td>800 V</td>
<td></td>
<td></td>
<td></td>
<td>Optoisolated Sink (PNP)</td>
</tr>
<tr>
<td>DO-16TS</td>
<td>16</td>
<td>Single</td>
<td>24 Vdc</td>
<td>500 mA</td>
<td>800 V</td>
<td></td>
<td></td>
<td></td>
<td>High Side Transistor</td>
</tr>
<tr>
<td>DO-16TP</td>
<td>16</td>
<td>Single</td>
<td>24 Vdc</td>
<td>2 A</td>
<td>800 V</td>
<td></td>
<td></td>
<td></td>
<td>High Side Transistor</td>
</tr>
<tr>
<td>DO-32TS</td>
<td>32</td>
<td>Double</td>
<td>24 Vdc</td>
<td>500 mA</td>
<td>800 V</td>
<td></td>
<td></td>
<td></td>
<td>High Side Transistor</td>
</tr>
<tr>
<td>DO-04RL</td>
<td>4</td>
<td>Single</td>
<td>250 Vac</td>
<td>2A (SPST) 1 A (SSR)</td>
<td>4000 V</td>
<td></td>
<td></td>
<td></td>
<td>SPST Relay SSR Relay</td>
</tr>
<tr>
<td>DO-04TX</td>
<td>4</td>
<td>Single</td>
<td>24 Vdc</td>
<td>6 A</td>
<td>800 V</td>
<td></td>
<td></td>
<td></td>
<td>High Side Transistor</td>
</tr>
<tr>
<td>DO-08RL</td>
<td>8</td>
<td>Double</td>
<td>250 Vac</td>
<td>2A (SPST) 1 A (SSR)</td>
<td>4000 V</td>
<td></td>
<td></td>
<td></td>
<td>SPST Relay SSR Relay</td>
</tr>
<tr>
<td>DM-08TS</td>
<td>8</td>
<td>Single</td>
<td>24 Vdc</td>
<td>24 Vdc</td>
<td>500 mA</td>
<td>800 V</td>
<td></td>
<td></td>
<td>Optoisolated Sink (PNP) Input or/and High Side Transistor Output</td>
</tr>
<tr>
<td>DM-16TS</td>
<td>8</td>
<td>Single</td>
<td>24 Vdc</td>
<td>24 Vdc</td>
<td>500 mA</td>
<td>800 V</td>
<td></td>
<td></td>
<td>Optoisolated Sink (PNP) Input or/and High Side Transistor Output</td>
</tr>
<tr>
<td>DM-32TS</td>
<td>16</td>
<td>Double</td>
<td>24 Vdc</td>
<td>24 Vdc</td>
<td>500 mA</td>
<td>800 V</td>
<td></td>
<td></td>
<td>Optoisolated Sink (PNP) Input or/and High Side Transistor Output</td>
</tr>
<tr>
<td>DO-32TR</td>
<td>32</td>
<td>Single</td>
<td>24 Vdc</td>
<td>24 Vdc</td>
<td>50 mA</td>
<td>800 V</td>
<td></td>
<td></td>
<td>Flat connector for relays modules</td>
</tr>
</tbody>
</table>
sigmaPAC®

Accessories

Operator Panels
A variety of Operator Panel sizes are available. Connection to SigmaPAC system via:
1) Serial RS485 (Modbus RTU driver embedded)
2) Ethernet (Modbus RTU driver embedded).

OP MT 8121X
- 64K color 12.1" TFT display
- SVGA (800 x 600 pixel) resolution
- Resistive touch screen
- Connection to industrial bus systems and Ethernet
- 256 MB user memory
- 256 MB internal Flash memory
- 3 Host USB 1.1 ports + 1 Client USB 2.0 port
- IP65 front panel protection
- Dimensions (mm): 322 x 243 - Cutout 51 mm
- Cutout (mm): 305 x 231 mm - Cutout 7 mm.

OP MT 8104XH
- 64K color 10.4" TFT display
- SVGA (800 x 600 pixel) resolution
- Resistive touch screen
- Connection to industrial bus systems and Ethernet
- 256 MB user memory
- 256 MB internal Flash memory
- 1 SD and SDHC card slot
- 2 Host USB 2.0 ports
- IP65 front panel protection
- Dimensions (mm): 322 x 243 - Depth 51 mm
- Cutout (mm): 305 x 231 mm - Cutout 7 mm.

OP MT 8070iH
- 64K color 7.0" TFT display
- LED backlight
- WVGA (800 x 480 pixel) resolution
- Resistive touch screen
- Connection to industrial bus systems and Ethernet
- 64 MB user memory
- 128 MB internal Flash memory
- 1 SD card slot
- 1 Host USB 1.1 port + 1 Client USB 2.0 port
- IP65 front panel protection
- Dimensions (mm): 286 x 212 mm - Depth 50 mm
- Cutout (mm): 259 x 201 mm - Cutout 7 mm.

OP MT 6050iV
- 64K color 4.3" TFT display
- LED backlight
- Resolution 480 x 272 pixel
- Resistive touch screen
- Connection to industrial bus systems and Ethernet
- 64 MB user memory
- 128 MB internal Flash memory
- 1 Client USB 2.0 port
- IP65 front panel protection
- Dimensions (mm): 128 x 102 - depth 28 mm
- Cutout (mm): 119 x 93 mm - Cutout 4 mm.
Easy Builder 8000
The OP operator panel configuration allows customized viewing of process variables, the creation of graphic pages, alarm management schedules and integrated system macros.

Autolink: the easy SCADA
• Data acquisition and monitoring
• Process operation
• Extensive driver library
• Mimic and pre-formatted pages
• Real time and historical trending
• Powerful alarm handling
• Flexible configurable reporting
• Recipe management
• Security levels for operator access
• Ethernet TCP/IP networking
• Data exporting to commonly used databases.

Power Supply Units
<table>
<thead>
<tr>
<th>Input Voltage:</th>
<th>88...264 Vac</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Voltage:</td>
<td>24V, ±1%</td>
</tr>
<tr>
<td>Output rated current:</td>
<td>2A (DR-45-24), 5A (DR-120-24)</td>
</tr>
<tr>
<td>Protection:</td>
<td>Over voltage, Overload, auto recovery</td>
</tr>
<tr>
<td>Temperature:</td>
<td>-10...+50 °C</td>
</tr>
<tr>
<td>Mounting:</td>
<td>DIN Rail</td>
</tr>
<tr>
<td>Dimensions:</td>
<td>97x78x67 mm (DR-45-24), 65x125x103 mm (DR-120-24)</td>
</tr>
</tbody>
</table>

Industrial standards GSM/GPRS/UMTS Modem
• E-GSM four band 850/900/1800/1900 MHz
• GPRS Class 10 (up to 4 Rx/2 Tx)
• SMS point to point
• GSM (SMA-M connector) antenna
• Serial data output (female sub-D 15 connector)
• Power supply: 5.5...32 Vdc (micro-FIT connector)
• AT commands: GSM 07.05 and 07.07.

Cables and connectors
• Additional Terminal Block 2x11 poles
• Plug clamps available with screw or spring clamp option
• Cables with RJ45 connectors are available with 14 cm or 22 cm standard lengths for easy daisy-chain connection of the I/O modules
• Termination connectors.
Support and Services

Support in selecting and configuring the system

“Sigma Team” is a team of specialists available to guide you when selecting and configuring components, to provide quotes and to recommend the best level of immediate and ongoing support.

Internet
Visit www.ascon.it for details and information on the various levels of support offered for the SigmaPAC system. The internet sites allow you to download numerous documents, such as technical charts, manuals, application examples, software, and more. Furthermore, you may make requests and submit queries to Ascon technicians.

Post-Sale Services
System specialists are available to help you use the system to the best of its capabilities. Our telephone assistance service will resolve most of your needs. Ascon staff is also available on a contract basis to support your technicians on site, wherever requested.

Application Control Strategy
Upon request, Ascon may develop Control Strategies and Functional Macroblocks to resolve problems inherent in a unique or special application, or component thereof, in a simple and standard manner. These may then be replicated and modified by clients to adapt to similar applications.

Installation Assistance
Ascon technicians are qualified in the installation of the SigmaPAC system. We work with the customer to assign the most qualified engineer to the application.

Seminars, Courses, Training
Ascon regularly organizes seminars on the SigmaPAC system, courses regarding the products and applications, and training sessions aimed at developers and installers. Customized courses may also be created for client-specific applications.

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