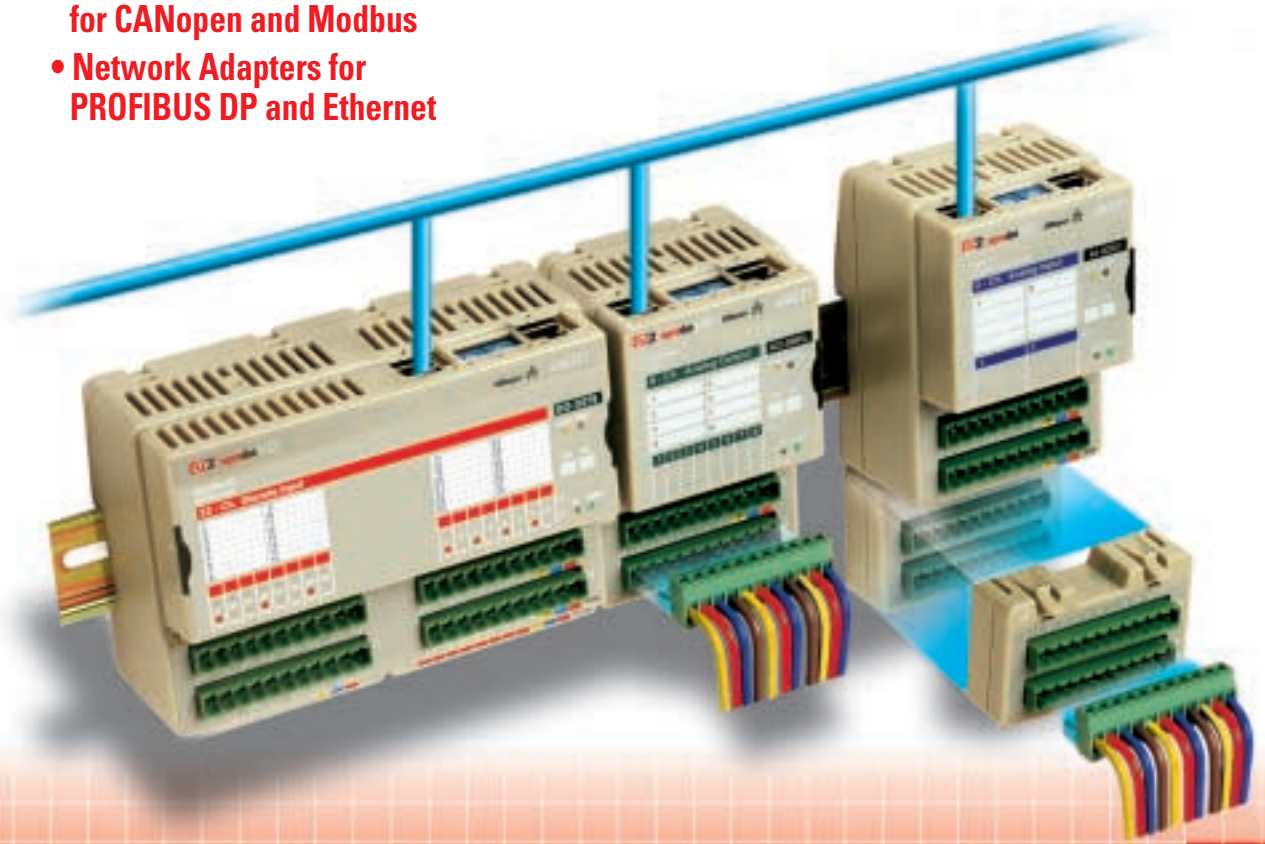
S E R I E S

# Stand-alone remote I/O modules for Fieldbus Solutions

## sigma**due**® series

- Powerful processing capability
- Multifunction Modules for Maximum Flexibility
- Fully software configurable
- Built-in Fieldbus Interface for CANopen and Modbus
- Network Adapters for PROFIBUS DP and Ethernet
- Easy wiring with built-in terminal blocks
- DIN rail mounting
- Extended temperature range -20..+70 °C



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**ISO 9001** Certified

# STAND ALONE REM

Over 30 years of experience in process control and machine automation, guarantees to Ascon's sigma**due**® I/O series an effective functional approach to industrial applications.

ASCON has grown from manufacturing a leading portfolio of process controllers to a new, complete family of **CANopen** and **Modbus** remote I/O modules, optimised for a wide range of industrial applications and connectable to PROFIBUS DP or Ethernet systems.

## sigma**due**® I/O

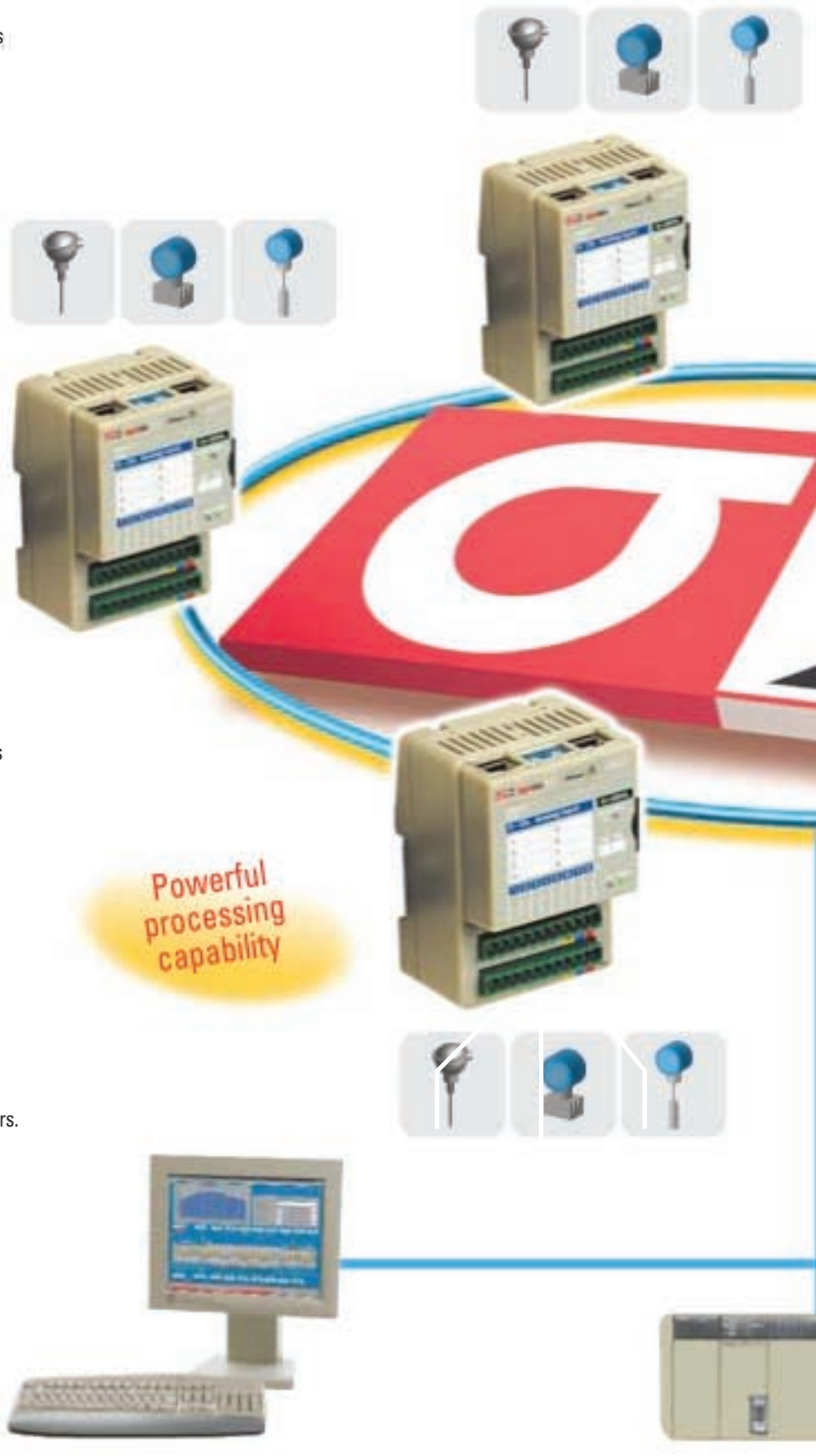
A complete range of high performance analogue and digital remote I/O modules, with direct interface to any control unit (PC, PLC, DCS or Operator Panel). They combine signal conditioning, channel to channel isolation and hardware and software filters, providing fast and accurate measurements.
An autodiagnostic system is also built-in.
Different kinds of I/O modules are available for solving data acquisition problems and process control tasks.

### Stand alone modules for Effective Distributed Automation

The modules are directly connected with fieldbus, each being a stand alone module including built-in terminal blocks for sensors and actuators wiring.
A fast bus connection results in easier expandability and distribution capability.

### Multifunction Modules for Maximum Flexibility

Through software configuration, sigma**due**® I/O modules can be used for different purposes. For example a module can be used at the same time for status and counter inputs, status and PWM outputs.
The sigma**due**® series includes modules which boast universal analogue inputs and can be configured for different sensors.
The availability of 8, 16 and 32-channel modules provides great flexibility, fitting many different applications.



# OTE I/O MODULES




**Powerful processing capability on board**
The embedded microprocessor takes care of the most common operations, such as linearisation, data scaling, engineering units conversion, alarm handling. This relieves the PC or PLC CPU from a considerable load of computing power, thus improving performance and bus efficiency.

**Fieldbus Interfaces**
Built-in for:
- CAN with CANopen protocol
- RS485 with Modbus protocol.

Open to other Fieldbuses through the sigma**due**® Network Adapters to allow integration with:
- PROFIBUS DP
- Ethernet.

**Easy installation and Quick Wiring**
Modules can be distributed along the plant in order to reduce engineering, mounting and wiring costs.

**Mounting**
- DIN rail

**Bus Connection**
- RJ45 Connectors and pre-formed cables
- Hot Swap possible

**I/O signal connection**
- Removable terminal block Plugs
- Screw or spring clamp type plugs
- A convenient additional Terminal Block is available to make an even easier wiring of field signals to the modules. It can just be added by a "click"

**Setup**
Full compatibility with the most common Fieldbus configurators.

S E R I E S

## sigmadue I/O module AI-02UI

**2 Isolated Universal Analogue Inputs: TC, RTD, mA, mV, V, Potentiometer**

- Functions: signal conditioning, linearisation, scaling, engineering units, limits, autotare, autozero,…
- 16 bit ADC
- 20 ms conversion time
- 0.1% accuracy
- TC (J, K, N, R, S, T,…)
  RTD (Pt100, Pt1000)
  Potentiometer 0,1..10KΩ
  0/4..20mA
  0..150mV - 0..10V
- 2500 Vp channel-to-channel isolation

## sigmadue I/O module AI-08HL

**8 Analogue Inputs mA, V**

- Functions: linearisation, limits,…
- 16 bit ADC
- 5 ms conversion time
- 0,1% accuracy
- 0/4 .. 20 mA
- 0..10V (-10..0..+10V to come)
- 800 Vp channel-to-fieldbus isolation

## sigmadue I/O module AI-08TC

**8 Analogue Inputs, TC, mV**

- Functions: signal conditioning, linearisation, scaling, engineering units, limits,…
- 16 bit ADC
- 50 ms conversion time
- 0,1% accuracy
- TC (J, K, L, N, R, S, T…)
- -50..+50 mV
- -300..+300mV
- -1..+1V
- 800 Vp channel-to-fieldbus isolation




ANALOGUE

**sigmadue I/O module** **AI-04RT**

**4 Analogue Inputs, RTD, TC, mV**

- Functions: signal conditioning, linearisation, scaling, engineering units, limits,…
- 16 bit ADC
- 120 ms conversion time
- 0,05% accuracy
- RTD (Pt100, Pt1000)
  TC (J, K, N, R, S, T,…)
  -50..+50 mV
  -300..+300mV
  -1..+1V
- 800 Vp channel-to-fieldbus isolation

**sigmadue I/O module** **AI-08HL**

**8 Analogue Outputs, mA, V**

- Functions: scaling, signal conditioning
- 16 bit DAC
- 20 ms conversion time
- 0,1% accuracy
- 0/4..20mA
- 0..10V (-10..0..+10V to come)
- 800 Vp channel-to-fieldbus isolation

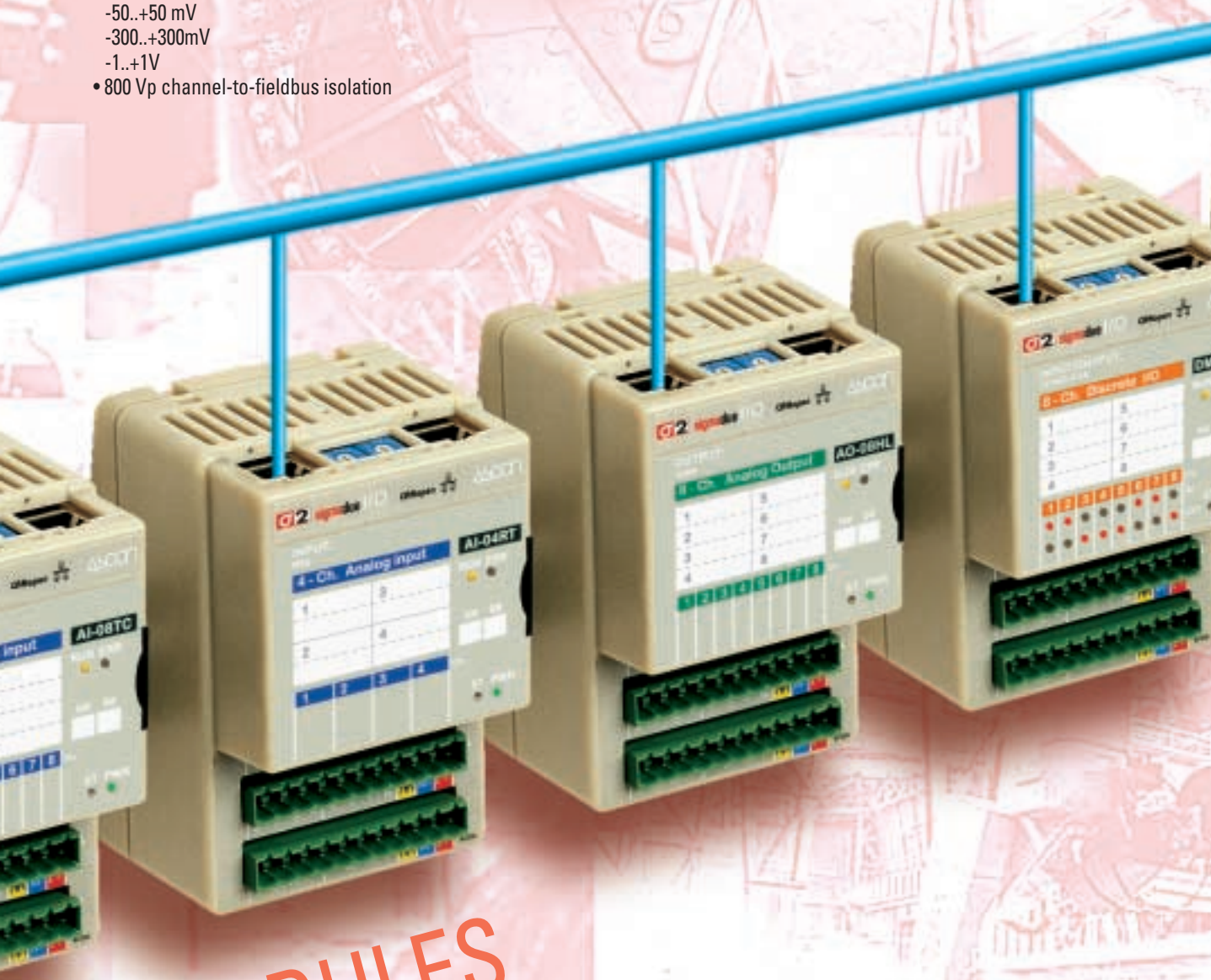
**sigmadue I/O module** **DM-08TS**

**sigmadue I/O module** **DM-16TS**

**sigmadue I/O module** **DM-32TS**

**8 Digital Inputs/Outputs**
**8 Digital Inputs + 8 Digital Outputs**
**16 Digital Inputs + 16 Digital Outputs**

- Functions:
  2 inputs counter, pulse frequency, pulse width (DM-08TS)
  2 outputs PWM pulse, single pulse (DM-08TS)
- 24Vdc optoisolated inputs
- 24Vdc, 0,5A optoisolated outputs
- 800 Vp channel-to-fieldbus isolation




# I/O MODULES

**sigmadue I/O module DI-16LV**
**sigmadue I/O module DI-32LV**

**16 Digital Inputs**
**32 Digital Inputs**

- Functions: Input status with polarity, edge detect, latch
- 24Vdc optoisolated input
- 800 Vp channel-to-fieldbus isolation

**sigmadue I/O module DO-16TS**
**sigmadue I/O module DO-16TP**
**sigmadue I/O module DO-32TS**

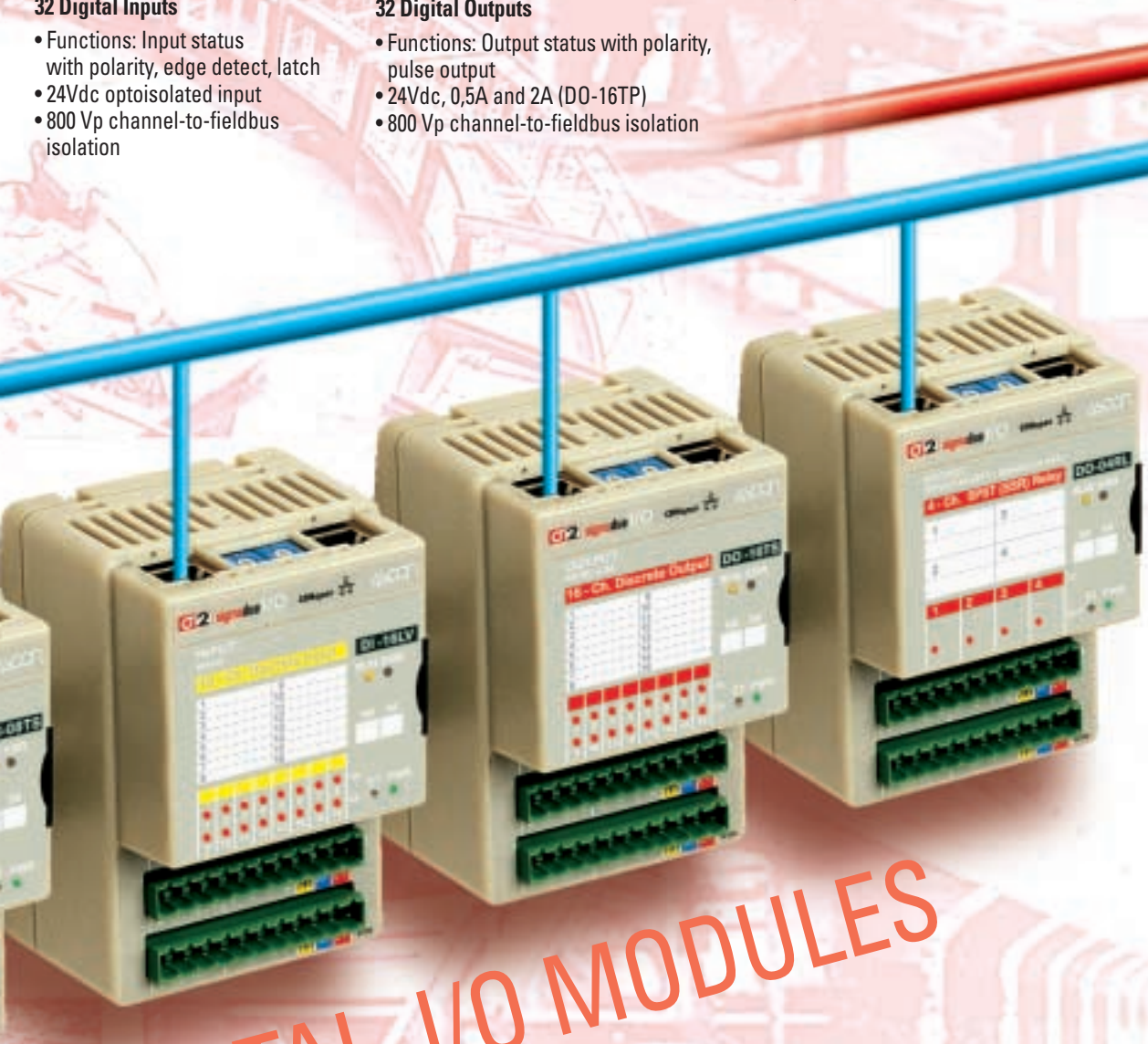
**16 Digital Outputs**
**16 2A Digital Outputs**
**32 Digital Outputs**

- Functions: Output status with polarity, pulse output
- 24Vdc, 0,5A and 2A (DO-16TP)
- 800 Vp channel-to-fieldbus isolation

**sigmadue I/O module DO-04RL**

**4 Relay Digital Outputs**

- Functions: Output status with polarity, pulse output
- SPST 250Vac 2A
- SSR 250Vac 1A
- 800 Vp channel-to-fieldbus isolation



# DIGITAL I/O MODULES

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## Industries and applications

**Process control**
- Water treatment
- Food and beverage
- Textile
- Pharmaceutical
- Pulp & Paper
- Electric Power
- Heat management

**Machine control**
- Textile
- Packaging
- Plastics
- Metalworking
- Electronics Manufacturing



**sigmadue I/O module NA-00PB**
**Network Adapter to PROFIBUS DP**

- 12 MHz DP slave node
- Connects up to 32 sigmadue I/O Modules to PROFIBUS
- Fully configurable via PROFIBUS

**sigmadue I/O module NA-00ET**
**Network Adapter to Ethernet**

- Connects up to 32 sigmadue I/O Modules to Ethernet
- Fully configurable

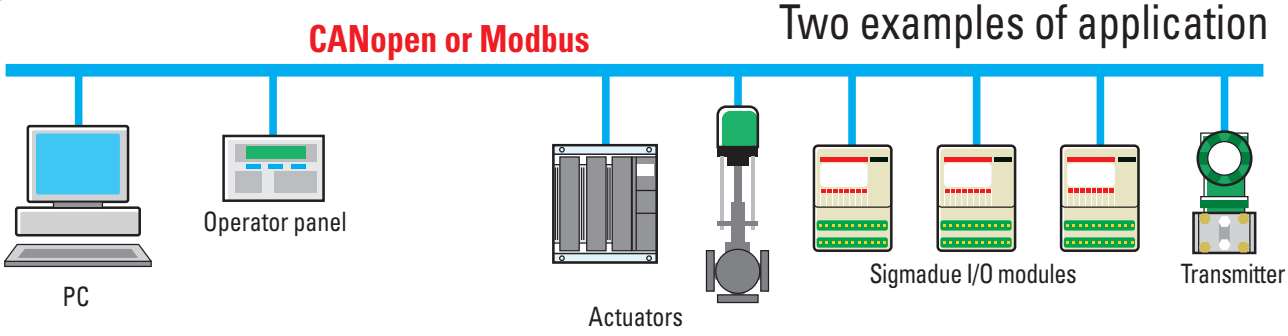


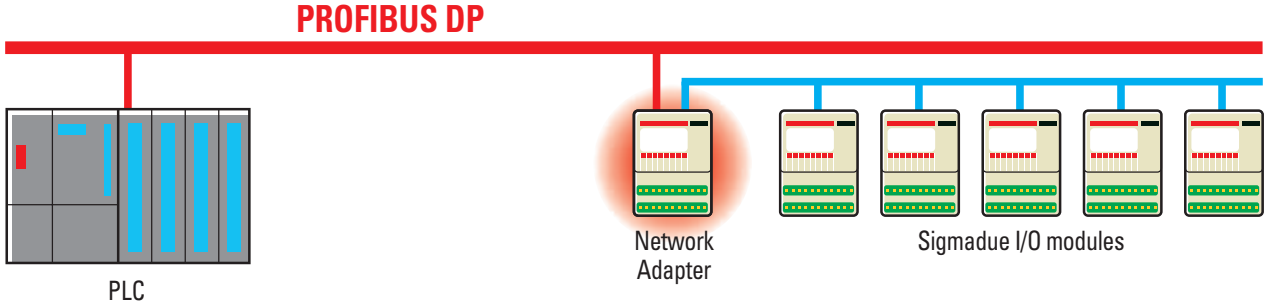
# ETWORK ADAPTER

## sigmadue® I/O general features

- General purpose modules with integrated special functions
- Direct connectivity to sensors and actuators
- 2, 4, 8, 16, 32 - channel modules, individually configurable
- Hot-swap capability
- Each module is autonomous with isolated standard interface to CANopen or RS485 Modbus
- Programmable Power-up status
- 24 Vdc Power Supply
- Ambient temperature operating range from -10 to +65 °C (-20 to +70 °C on request)
- Dimensions: w 76 x h 110 x d 65 mm or w 152 x h 110 x d 65 mm for DM-32TS, DI-32LV, DO-32TS.

## Two examples of application






## Available modules

For details please refer to the specific technical bulletins.

| Analog I/O modules | |
|---|---|
| **AI-02UI** | 2 ch - universal isolated Inputs |
| **AI-08HL** | 8 ch - V, mA Inputs |
| **AI-08TC** | 8 ch - TC, mV Inputs |
| **AI-04RT** | 4 ch - RTD, TC, mV Inputs |
| **AO-08HL** | 8 ch - V, mA Outputs |
| **Other modules to come** | |
| | Strain Gage Input |
| | Mixed Digital and Analogue I/O |
| | DeviceNet modules |

| Digital I/O modules | |
|---|---|
| **DM-08TS** | 8 ch - 24Vdc 0,5A Input or Output |
| **DM-16TS** | 16 ch - 8 DI + 8 DO 24Vdc, 0.5A |
| **DM-32TS** | 32 ch - 16 DI + 16 DO 24Vdc, 0.5A |
| **DI-16LV** | 16 ch - 24Vdc Inputs |
| **DI-32LV** | 32 ch - 24Vdc Inputs |
| **DO-16TS** | 16 ch - 24Vdc 0,5A Outputs |
| **DO-16TP** | 16 ch - 24Vdc, 2A Outputs |
| **DO-32TS** | 32 ch - 24Vdc 0,5A Outputs |
| **DO-04RL** | 4 ch - Relays Outputs |

| Network Adapters | |
|---|---|
| **NA-00PB** | PROFIBUS DP Network Adapter |
| **NA-00ET** | Ethernet Network Adapter |
| | |
| | |
| | |
| | |

| Accessories | |
|---|---|
| **AL-DR45-24** | 45W - 24Vdc/2A power supply |
| **AL-DR120-24** | 120W - 24Vdc/5A power supply |
| **LOCAL-BUS76** | RJ45 term. 14 cm segment cable |
| **LOCAL-BUS152** | RJ45 term. 22 cm segment cable |
| **TERM-CAN** | Bus Termination Adapter |
| **TB-211-1** | Additional Terminal Block |

## Fieldbus Technology

Using fieldbus technology, measured values, commands and feedback signals, events and alarms are exchanged by a common high speed digital communication network.

### CANopen

CANopen is a high level protocol based on CAN serial bus system; its specifications were developed by CiA (CAN in Automation), an independent international organisation.
CANopen is used successfully in many industrial control systems: the very flexible Application Layer and many optional functionalities perfectly match network designer needs.

**CANopen advantages:**

- Open and vendor independent, EN50325-4 standard
- Supports interoperability of different devices
- High speed real-time capability
- Modular, covers simple to complex devices
- User-friendly, wide variety of support tools available

**Features of CANopen technology compared to other buses:**

- Auto configuration of the network
- Easy access to all device parameters
- Network synchronisation
- Cyclic and event-driven data transfer
- Synchronous reading or setting of inputs, outputs and parameters.

### Modbus®

Modbus® is one of the best known communication protocols, implemented by hundreds of vendors, in a very large number of devices. Its inexpensive hardware and software needs have made Modbus a recognised, “de facto” standard protocol.


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