

CONTROL SYSTEM **S-DIAS**



CONTROL, I/O, MOTION AND SAFETY IN POCKET FORMAT

ONE SYSTEM – MANY FUNCTION

Fast signal processing, comfortable handling, high vibration resistance – and that in a super-compact form. Furthermore, safety is included as an integral system component. The S-DIAS system is best equipped for the most varying automation 4.0 tasks.

Up to 20 channels are packed into one S-DIAS DIN rail module. With this package density, you save significant space in the control cabinet or machine.

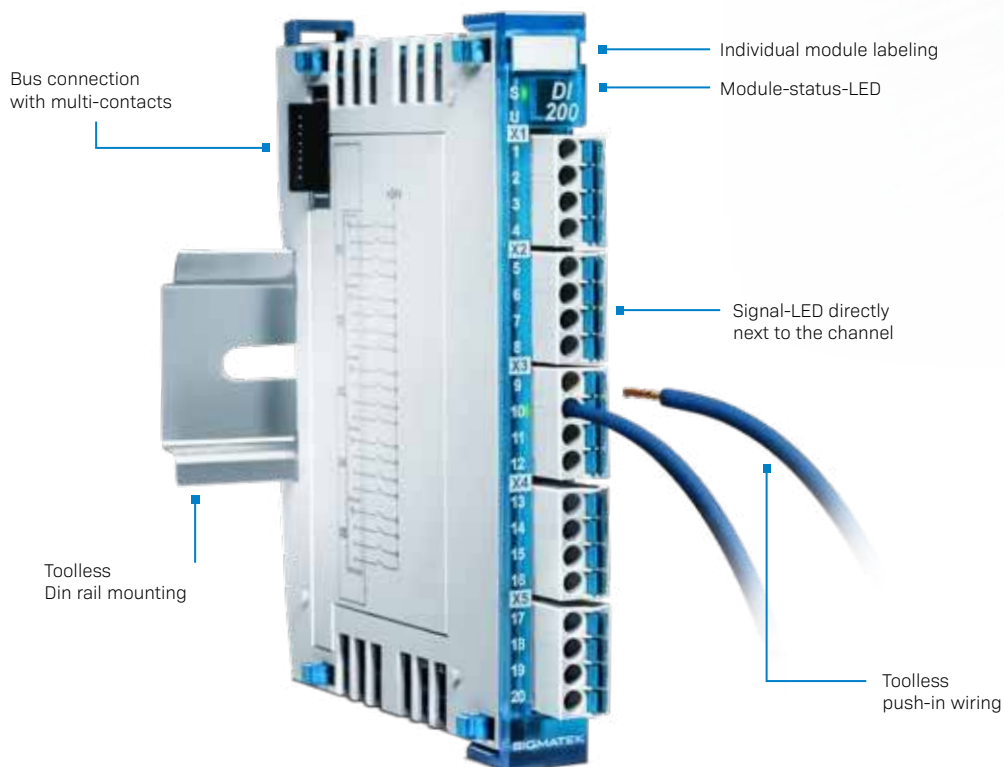
FOR ANY APPLICATION

Thanks to the powerful and high mechanical stability, S-DIAS can be used in the most varying applications – even in places where until now, only special board-based solutions with or without limited expanda-

bility could be used because of space restrictions.

MODULE VARIETY

From a versatile, modular system toolkit, the CPUs, digital and analog I/Os, motion, safety and special function modules can be combined and configured as needed.



Dimensions: 12.5 x 104 x 72 mm (WxHxD)



HOT FACTS

SUPER-COMPACT

up to 20 I/Os in a module size of only 12.5 x 104 x 72 mm

SMART

complete module solution, signal LEDs directly next to the channels, push-in wiring, toolless mounting

FAST

100-Mbit/s bus speed

STABLE

high mechanical reliability and vibration resistance

SAFE

safety fully integrated

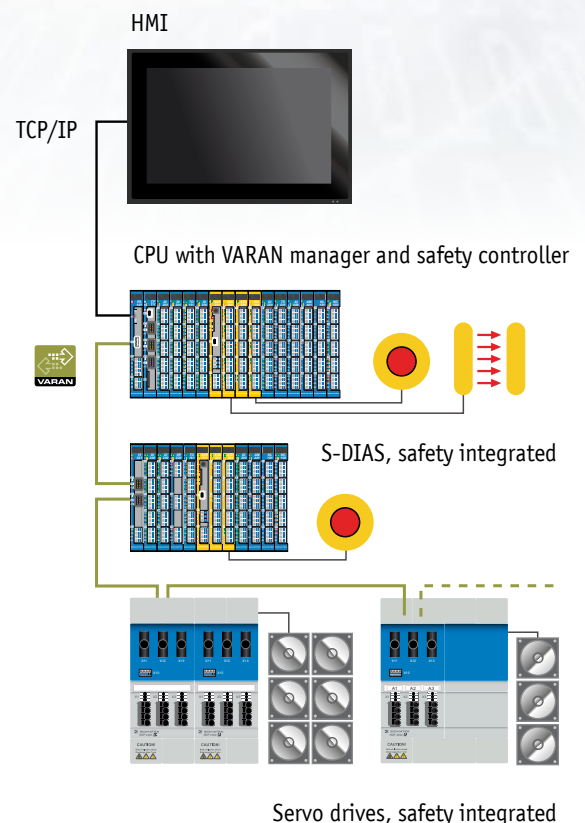
FLEXIBLE SYSTEM DESIGN

S-DIAS is modularly structured and optimally suited as a system solution for central and decentralized automation designs. You can flexibly combine standard and safety components and have a high degree of freedom in the design of the system.

Especially for modular machine 4.0 concepts, an integrated and flexible network from the control to the field level plays an important role. Here, the real-time Ethernet bus VARAN scores with a high user data rate, guaranteed data security and hot-plug capability. Interface modules enable integration into existing systems and production lines.

EPLAN-MACROS

Electro planning made easy: For the S-DIAS product family, EPLAN macros are available for simple integration into the control cabinet.



EFFICIENCY IN EVERY RESPECT

MANY BENEFITS THIN ON A RA

The S-DIAS series provides a large portion of user benefits in the smallest installation space.

Up to 20 channels per module are possible and this with dimensions of only 12.5 mm width, 104 mm height and 72 mm depth. The S-DIAS achieves therewith, a unique package density of only 63 mm² per channel. In addition to this compactness, there are further advantages with which the efficient system solution convinces:



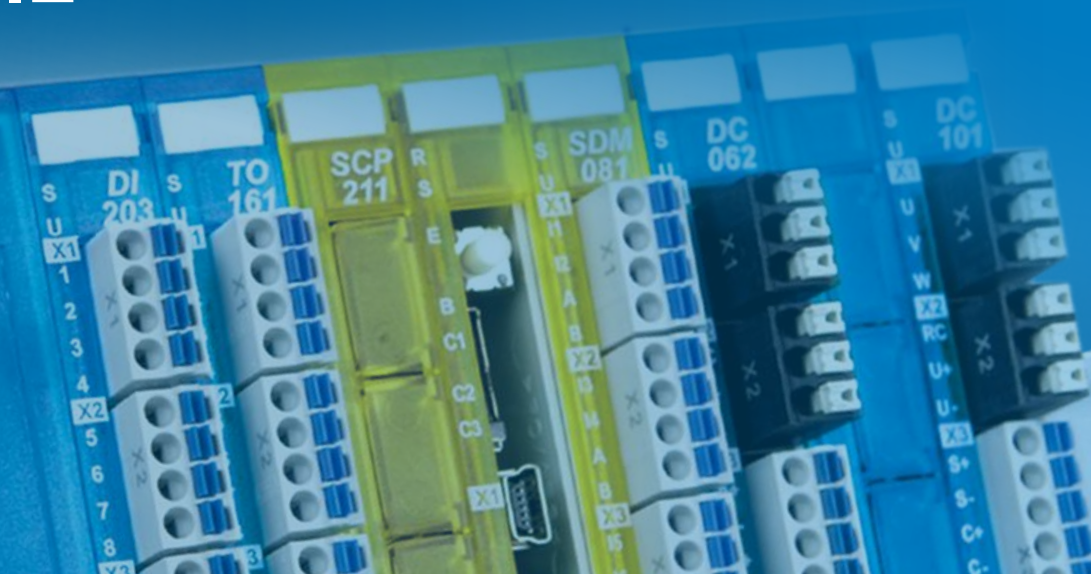
Saves Space

With up to 20 I/Os per module, S-DIAS sets new standards when it comes to package density. For you, this miniaturization means: more function in less space. Within an 80 cm width, 64 modules with up to 1,280 I/Os can be installed. Even when the complexity of your machines increases, with S-DIAS, the control cabinet volume is reduced. That is an essential aspect, since control cabinet space is unavoidably linked to costs.



Robust and Vibration Proof

S-DIAS is consciously designed as a complete module solution. Electronics, bus and DIN rail mount are combined in one stable housing – extra connections are eliminated and the stability of the application increased. The module supply, as well as bus connection is provided over a robust multi-contact plug. A unique feature is the mechanical interlocking – it creates a form-fitting, vibration resistant connection of the modules.



Operation Ready

The modules are delivered to you ready to use – including standard connectors with push-in spring terminals. The I/Os can therefore be wired quickly and without tools, pre-assembled into blocks and mounted on the DIN rail. 1, 2 or 3 wire connection technology is possible – up to a cross-section of 1.5 mm². The smart complete module solution also simplifies ordering and storage, since only one component must be ordered, unpacked and installed.



Channel-specific Diagnosis

S-DIAS scores with clear module allocation. The status LEDs provide information on the communication status. In addition, next to the connection point of each individual channel, a signal LED is located that provides information on the status of the contact point. A fast and above all, clear identification and diagnosis are achieved and service simplified. The module labelling enables individual marking. This increases clarity in the control cabinet.



Real-time Communication

The S-DIAS series communicates over the hard real-time Ethernet bus VARAN with a speed of 100 Mbit/s and is therefore perfectly suited for very fast, dynamic applications. Individual I/O modules can be accessed within 1.12 µs. Per CPU module or VARAN bus interface, 64 participants with up to 1,280 I/Os can be connected; the update time is under 60 µs. With splitter and interface modules (VARAN, Ethernet, EtherCAT, CAN, Profinet), the S-DIAS system can be integrated into a system bundle of different manufacturers.

CPU: GROW WITH THE TASK

To design machine controls more flexibly, distributed intelligences are a smart approach: The machine or system is divided into mechatronic function units and equipped with processing intelligence directly on-site. With the S-DIAS, multi-CPU concepts can be easily implemented and flexibly adapted to customer requirements at any time.



COMPACT CPU MODULES

The CPUs in S-DIAS format with high-performance EDGE2 Technology processors are the right choice for versatile control and motion tasks. You can tune the processor performance exactly to your application: from the economic single-CPU to the high-performance dual-core CPU (2x 800 MHz).

Depending on the module, various interfaces such as Ethernet, Industrial Ethernet VARAN, EtherCAT Drive Controller, CAN and USB are integrated. The network connection is made with industrial Mini I/O connector plugs. With their 2-point contact principle, these standard connectors provide an exact, vibration resistant connection.

HIGH-PERFORMANCE CPU UNITS

With powerful Intel® Atom™ dual- or quad-core processors and Intel® Core i3 dual-core processors, the 730, 800 and 900 series CPU units are ideally suited for complex control, regulation and motion control tasks.

The robust CPU units, which can also be used as a central control platform in multi-CPU concepts, bring with them a wide range of interfaces that are located on the front panel for practical use: Ethernet, Industrial Ethernet VARAN, EtherCAT Drive Controller, CAN, USB as well as S-DVI and Displayport.

The bus interface is located on the side so that S-DIAS I/O modules can be directly attached.



SAFETY: FLEXIBLE AND PROGRAMMABLE



▲ Slim safety system: The SCP 211 software supports new functions that considerably simplify the handling of safety applications.

With future-oriented machine concepts, a programmable, integrated safety solution is a must. With the slim S-DIAS Safety system, safety technology can be seamlessly, flexibly and very economically integrated into the standard system.

SAFETY UNDER CONTROL

The modular, easily configurable safety solution consists of a safety controller in combination with safe I/Os. The SCP 111 and SCP 211 safety controllers monitor and control the application and provide the bus interface to the safe I/O modules.

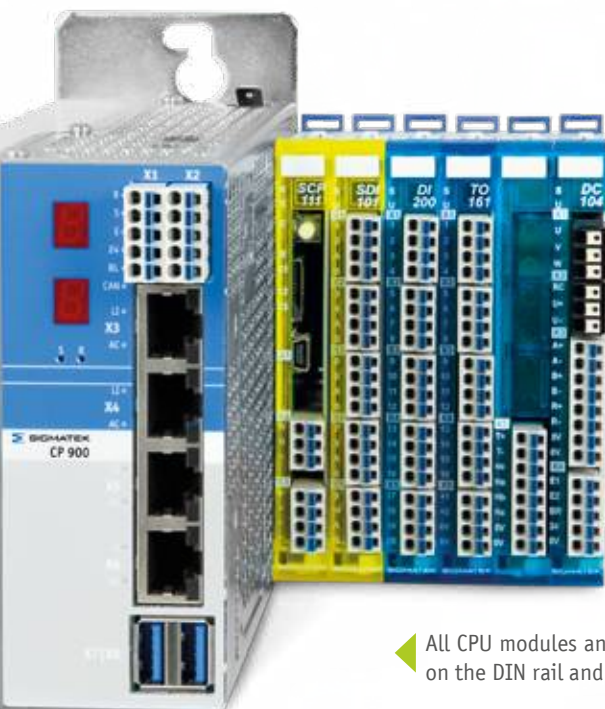
In addition to various safety I/Os, a relay, an SSI absolute value encoder and an incremental encoder module are available. The safety data is transmitted via VARAN, TCP/IP and wireless networks (WiFi) according to the Black Channel principle.

INTEGRATED OR STAND-ALONE

Through complete integration, the shortest reaction times are achieved for signal processing – which are in the range of a few milliseconds. The S-DIAS Safety system is TÜV-certified (up to SIL 3, Cat. 4, PL e) and can also be used as a stand-alone solution.

MINI-SAFETY-SOLUTION

Within a 25-mm width, a mini safety solution can be implemented – whether for emergency stop, door contact or light grids: the safety controller SCP 111, combined with the digital mix module SDM 081 with 6 inputs and 2 outputs.



▲ All CPU modules and units can be mounted on the DIN rail and support OPC UA.

MOTION IN POCKET FORMAT

The S-DIAS portfolio also includes motion modules for the DIN rail. This allows you to control servo motors, brushed DC motors and stepper motors in a compact way.



SERVO FUNCTIONALITY

The super compact, fully integrated servo amplifier of the S-DIAS DC series, with a rated power of nearly 300–480 W, is designed to control synchronous servo motors with up to 6 A or 10 A of continuous current at 48 V DC (peak current 15 A or 20 A). Standard resolver (DC 061/101), incremental encoder (DC 062/102) or universal encoder (DC 064/104) interfaces are available for position feedback. Integrated are a +24 V DC output for controlling a holding brake and a 2-channel enable input. It can be used to implement the safety function STO (SIL 3, PL e).

DC BRUSH MOTORS

The modules SR 011/012 are available for control and regulation of economic DC brush motors with a phase current of up to 5 A and a 15 A (SR 011) or 10 A (SR 012) peak current. The SR 011 is equipped with

an integrated brake chopper and a switchable incremental encoder, the SR 012 has four digital inputs that can be used as limited switches.

STEPPER MOTOR CARD

The ST 151 and the ST 152 are used to control 2-phase stepper motors. Up to 5 A continuous current is possible. The stepper motor output stage can be operated in full, half or micro steps (up to 64 or 256). An incremental encoder interface for position control, as well as two digital inputs (+24 V DC, 10 μ s) are already on board. These can be used as an end switch, a position latch or for reference profiles. The ST 152 also offers closed loop regulation. The integrated two-channel enable input allows the implementation of the safety function STO (SIL 3, PL e).

STO INTEGRATED

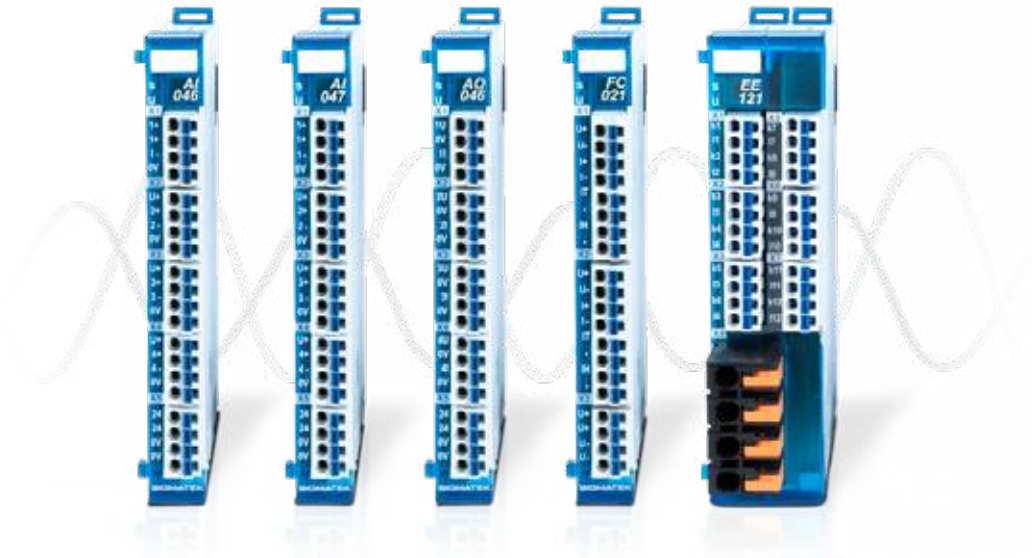
Safety function Safe Torque Off for applications up to SIL 3 (EN 62061) and Category 4, PL e (EN ISO 13849-1/2).

HIGH-PRECISION MEASURING TECHNOLOGY

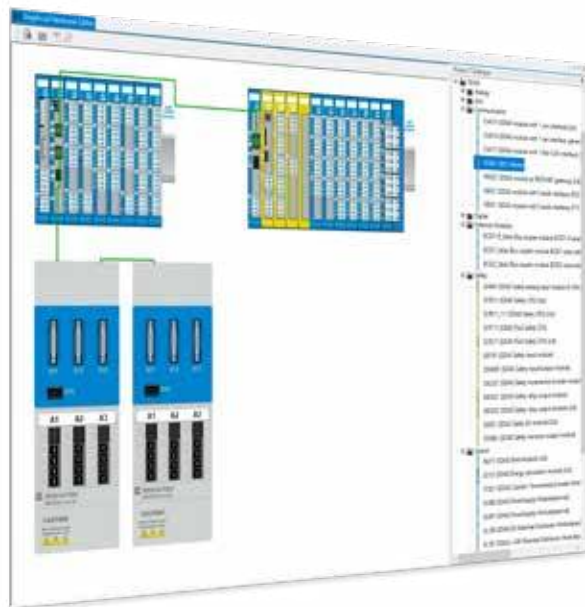
Record measurement values quickly and precisely: The S-DIAS measurement technology series has the right module for any task. The selection of products includes I/O cards for measuring:

- Current
- Voltage
- Frequency
- Temperature (PT 100/PT 1000)
- Strain gauge load cells
- Absolute and differential pressure
- SSI absolute value encoder
- Energy recording
(Predictive Maintenance)
- IEPE analysis
(Condition Monitoring)

Through the modular construction, you can configure the measurement values specifically for your application. You save costs and profit from a perfectly tuned system solution with the smallest space. That is efficiency.



The highly compact S-DIAS measurement modules are optimally suited for diverse areas of applications in the industry.



In the graphical hardware editor, the S-DIAS modules can be easily programmed, parameterized and diagnosed.

EFFICIENT ENGINEERING

Project development and programming are also user-friendly with the object-oriented engineering tool LASAL. Control, visualization, motion control, safety, service and remote maintenance are combined in an integrated platform (according to IEC 61131-3 Norm).











LASAL supports a modular, mechatronic approach to machine design. Machine components are simulated in the software objects. Code and data are combined into logical units (objects).

The graphical representation provides high clarity and via object orientation, the highest modularity and reusability are achieved. This contributes to a significant reduction of development times and costs.

The graphical hardware editor supports you in project development, parameterization and diagnostics. Even safety projects can be comfortably designed in the LASAL SAFETYDesigner.

COMPLETE OVERVIEW S-DIAS MODULES

| CPU & Bus Connection | |
|------------------------|--|
| CP 102 | EDGE2 Technology processor, 1x Ethernet, 1x CAN, 1x USB OTG (On-the-Go) |
| CP 111-2 | EDGE2 Technology processor, microSD, 1x Ethernet, 2x VARAN Out, 1x CAN, 1x USB OTG, 1x USB Host 2.0 |
| CP 112-2 | EDGE2 Technology processor, microSD, 2x Ethernet, 1x VARAN Out, 1x CAN, 1x USB OTG, 1x USB Host 2.0 |
| CP 311 | EDGE2 Technology processor, microSD, 1x Ethernet, 2x VARAN Out, 1x CAN, 1x USB Host, 1x USB OTG, voltage supply integrated |
| CP 312 | EDGE2 Technology processor, microSD, 2x Ethernet, 1x VARAN Out, 1x CAN, 1x USB Host, 1x USB OTG, voltage supply integrated |
| CP 313 | EDGE2 Technology processor, microSD, 2x Ethernet, 1x EtherCAT Drive Controller, 1x VARAN Out, 1x CAN, 1x USB Host, 1x USB OTG, voltage supply integrated |
| CP 731 | Intel® Atom™ dual-core processor, microSD, 2x Ethernet, 2x VARAN Manager, 1x CAN, 1x USB 3.0, 1x USB Device 2.0 |
| CP 733 | Intel® Atom™ dual-core processor, microSD, 1x Ethernet, 2x VARAN Manager, 1x CAN, 1x USB 3.0, 1x USB 2.0, 1x EtherCAT Drive Controller |
| CP 831 | Intel® Atom™ quad-core processor, 2x Ethernet, 2x VARAN Out Manager, 1x CAN, 2x USB 2.0 Type A, 1x USB 3.2 Gen 1 Type C (Host only) |
| CP 833 | Intel® Atom™ quad-core processor, 1x Ethernet, 1x EtherCAT Drive Controller, 2x VARAN-Out Manager, 1x CAN, 2x USB 2.0 Type A, 1x USB 3.2 Gen 1 Type C (Host only) |
| CP 841 | Intel® Atom™ quad-core processor, 2x Ethernet, 2x VARAN Out Manager, 1x CAN, 2x USB 2.0 Type A, 1x USB 3.2 Gen 1 Type C (Host only), 1x S-DVI |
| CP 931 | Intel® Core i3 dual-core processor, 2x Ethernet, 2x VARAN Out Manager, 1x CAN, 2x USB 3.2 Type A, 1x USB 3.2 Gen 1 Type C (Host only), 1x DisplayPort 1.4a |
| CP 933 | Intel® Core i3 dual-core processor, 1x Ethernet, 1x EtherCAT Drive Controller, 2x VARAN Out Manager, 1x CAN, 2x USB 3.2 Type A, 1x USB 3.2 Gen 1 Type C (Host only), 1x DisplayPort 1.4a |
| VI 021 | Bus connection, 1x VARAN In, 1x VARAN Out, +24 V DC supply |
| EC 121 | 1x EtherCAT In, 1x EtherCAT Out, +24 V DC supply |
| Interfaces & Splitters | |
| ICA 011 | 1x CAN |
| ICA 012 | 1x CAN (galvanically separated) |
| IIO 041 | 4x SDCI ports according to IEC 61131-9 (IO-link), 4 digital inputs +24 V DC, 0.5 ms |
| IPN 021 / 021-1 | 1x Profinet I/O In, 1x Profinet I/O Out IPN 021-1: identification parameters configurable |
| ISE 021 | 1x RS232, 1x RS485 |
| ISE 031 | 1x RS232, 1x RS485, 1x TTY |
| SE 051 | Ethernet-Switch (RJ45), 1x In, 4x Out |
| SE 052 | Ethernet-Switch (Tyco Mini I/O), 1x In, 4x Out |
| SEC 171 | 8x EtherCAT (RJ45) |
| SV 141 | 1x VARAN In (RJ45), 4x VARAN Out (RJ45) |
| SV 142 | 1x VARAN In (Tyco Mini I/O), 4x VARAN Out (Tyco Mini I/O) |
| Digital Input | |
| DI 080 | 8 inputs +24 V DC, 5 ms |
| DI 160 | 16 inputs +24 V DC, 5 ms |
| DI 169 | 16 counter inputs, GND switching, +24 V DC, 50 µs |
| DI 200 | 20 inputs +24 V DC, 5 ms |
| DI 202 | 4 counter inputs +24 V DC, 10 µs, 16 inputs +24 V, 0.5 ms |
| DI 203 | 20 inputs +24 V DC, 0.5 ms |
| DI 204 | 2 incremental encoders with TTL signal +5 V DC, 1.5 mA, 10 µs, 14 digital inputs +24 V DC, 3.7 mA, 0.5 ms |
| DI 205 | 20 inputs, GND switching, +24 V DC, 5 ms |
| Digital Output | |
| TO 081 | 8 outputs +24 V DC, 0.5 A, short-circuit proof |
| TO 127 | 12 outputs +24 V DC, 1.7 A, short-circuit proof, outputs separated by optic coupler |
| TO 161 | 16 outputs +24 V DC, 0.5 A, short-circuit proof |
| PW 022 | 2 PWM outputs +18-30 V DC, +24 V-switching, pulse width modulation, adjustable frequency 30.5 Hz - 20 kHz |
| PW 161 | 16 outputs +18-52 V DC, GND switching, 0.5 A, pulse width modulation, frequency 20 kHz |
| RO 041 | 4 relay outputs +230 V AC, 6 A or +24 V AC, 6 A (closer contacts) |
| RO 051 | 5 relay outputs +115 V AC, 6 A or +24 V AC, 6 A (changeover contacts) |
| Digital Mix | |
| DM 046 | 4 inputs +24 V DC, 5 ms, 4 outputs +24 V DC, 1.7 A, short-circuit proof, galvanically separated |
| DM 081 | 4 inputs +24 V DC, 5 ms, 4 outputs +24 V DC, 0.5 A, short-circuit proof |
| DM 108 | 4 inputs + 24 V DC, 5 ms, 4 outputs +24 V DC, 0.5 A, short-circuit proof, 2 back-readable outputs +24 V DC, 0.5 A, short-circuit proof |
| DM 161 | 8 inputs +24 V DC, 5 ms, 8 outputs +24 V DC, 0.5 A, short-circuit proof |
| DM 162 | 4 inputs +24 V DC, 5 ms, 4 inputs with counter function/time measurement, 8 outputs +24 V, 0.5 A, short-circuit proof |
| DM 167 | 8 inputs +24 V DC, 5 ms, 8 outputs +24 V DC, 1.7 A, short-circuit proof, outputs separated with optic coupler |
| Analog Input | |
| AI 022 / 022-1 | 2 strain gauge inputs (24 bits) AI 022: measurement range ±1.875 to ±120 mV AI 022-1: measurement range ±1.25 to 80 mV  |
| AI 023 | 2 inputs PT100/PT1000/KTY |
| AI 031 | 3 inputs 0-5 A AC (12 bits)  |
| AI 040 | 4 inputs for vibration sensors with IEPE interface, condition monitoring  |
| AI 043 | 4 inputs PT100/PT1000/KTY  |
| AI 046 | 4 inputs ±11 V DC or ±1.1 V DC (18 bits)  |
| AI 047 | 4 inputs 0-22 mA or 4-22 mA (18 bits)  |
| AI 075 | 6 inputs ±10 V DC (16 bits), 1 KTY/PT1000 temperature input  |
| AI 0812 | 8 inputs PT1000/KTY (16 bits) |
| AI 084 | 8 inputs 0-20 mA (16 bits) |
| AI 088 / 088-1 | 8 thermal element inputs (16 bits), 2 KTY inputs (16 bits) AI 088: 0-40 mV AI 088-1: 0-50 mV |

| Analog Output | | |
|--|--|---|
| AO 026 | 2 outputs ± 10 V DC or 0-20 mA (16 bits), switchable per channel |  |
| AO 046 | 4 outputs ± 10.8 V DC or 0-21.6 mA (16 bit), switchable per channel |  |
| AO 081 | 8 outputs ± 10 V DC (12 bits) | |
| Analog Mix | | |
| AM 221 | 2 inputs ± 10 V DC (16 bits), 2 outputs ± 10 V DC (12 bits), 1 reference output +10 V DC, max. 5 mA | |
| AM 222 | 2 inputs 0-20 mA (16 bits), 2 outputs 0-20 mA (12 bits) | |
| AM 441 | 4 inputs ± 10 V (16 bits), 4 outputs ± 10 V (12 bits), 1 reference output +10 V, max. 10 mA | |
| AM 442 | 4 inputs 0-20 mA (16 bits), 4 output 0-20 mA (12 bits) | |
| Digital Analog Mix | | |
| IO 011 | 6 digital inputs (0.5 ms), 8 digital outputs (0.5 A), 1 analog input (± 10 V DC), 1 analog current input (0-20 mA) | |
| IO 011S | 6 digital inputs (1 μ s), 8 digital outputs (0.5 A), 1 analog input (± 10 V DC), 1 analog current input (0-20 mA) | |
| Counter & Position Recording | | |
| BC 031 | Gyroscope sensor, 1x Ethernet, 1x RS485 |  |
| DI 204 | 2 ABR counter, TTL signal, 10 μ s, 14 digital inputs +24 V DC, 0.5 ms | |
| FC 021 | 2 digital RS422 inputs, 2 digital TTL inputs galvanically separated, 2 digital HTL inputs galvanically separated, all inputs with counter function |  |
| NC 100 | Incremental encoder, 1 ABR counter, TTL/RS422, encoder supply 5 V, 4 digital inputs +24 V, 10 μ s, 4 digital outputs +24 V, 2 A | |
| SI 021 | 2 SSI absolute encoders (up to 32 bits) |  |
| TS 041 | Transsonar module for 4 distance measurement systems, DPI/IP protocol |  |
| TS 051 | Transsonar module for 5 distance measurement systems, DPI/IP protocol |  |
| Motion | | |
| DC 061-1 | Servo motor output stage, resolver, 6 A continuous / 15 A peak current, +48 V DC, holding brake, STO | |
| DC 062 | Servo motor output stage, incremental encoder, 6 A continuous / 15 A peak current, +48 V DC, holding brake, STO | |
| DC 064 | Servo motor output stage, universal / absolute encoder, 6 A continuous / 15 A peak current, +48 V DC, holding brake, STO, brake chopper, motor temperature sensor input | |
| DC 101 | Servo motor output stage, resolver, 10 A continuous / 20 A peak current, +48 V DC, holding brake, STO | |
| DC 102 | Servo motor output stage, incremental encoder, 10 A continuous / 20 A peak current, +48 V DC, holding brake, STO | |
| DC 104 | Servo motor output stage, universal / absolute encoder, 10 A continuous / 20 A peak current, +48 V DC, holding brake, STO, brake chopper, motor temperature sensor input | |
| SR 011 | DC motor output stage, incremental encoder RS422/TTL, 5 A continuous / 15 A peak current, brake chopper, 2 enable inputs, 1 digital output | |
| SR 012 | DC motor output stage, 5 A continuous / 10 A peak current, brake chopper, 2 enable inputs, 4 digital inputs, 1 digital output | |
| SR 020 | DC motor current controller, 12-30 V DC supply, 0-3.5 A, power LED output 0-350 mA | |
| SR 022 | DC motor current controller, 12-30 V DC supply, 0-3.5 A, 1 incremental encoder, 3 digital inputs | |
| ST 011 | Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs | |
| ST 151 | Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper | |
| ST 152 | Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop control | |
| Special Functions | | |
| CO 041 | 4 current-controlled outputs / pulse-signal outputs for valve control, 4 digital inputs +5 V | |
| DM 811 | 1 absolute pressure input 0-1600 mbar, 1 PT100, 8 digital inputs +24 V DC, 0.5 ms |  |
| DM 822 | 2 differential pressure inputs -2068 mbar ... +2068 mbar, 8 digital inputs +24 V DC, 0.5 ms |  |
| EE 121-1 | Energy recording, 3 voltage inputs (0-600 V AC, 16-bits), 12 current inputs (0-2 A AC, 16-bits), power grid synchronization |  |
| EZ 101 | 10 digital inputs for implementing Euromap interface | |
| EZ 102 | 10 digital outputs for implementing Euromap interface | |
| EZ 122 | 12 digital outputs for implementing Euromap interface | |
| KL 090/KL 091 | Potential distribution 9x 0 V (ground), 9x +24 V DC (supply), current limited; difference: connector layout | |
| KL 180 | Potential distribution 18x 0 V ground | |
| KL 181 | Potential distribution 18x +24 V DC (supply) | |
| PL 221 | 2 outputs RGB pixel LED strips (24 bits), 2 outputs +24 V PWM LED strips | |
| PSB 001 | Expansion supply | |
| RC 001 | 1x real-time clock | |
| VA 011 | VARAN Analyzer, 1x VARAN In (RJ45), 1x VARAN Out (RJ45), 1x Gigabit Ethernet 10/100/1000 | |
| BL 011 | Placeholder for expansions | |
| Safety | | |
| up to SIL 3 according to IEC 62061 and EN ISO 13849-1/-2, PL e, Cat. 4 | | |
| SCP 111 | Safety controller, 1x USB device, microSD slot, Flash 224 kbyte, SRAM 24 kbyte, total current 800 mA | |
| SCP 211 | Safety controller, 1x USB device, microSD slot, Flash 1 Mbyte, SRAM 500 kbyte, total current 1600 mA | |
| SDI 101 | 10 safe digital inputs +24 V DC, 0.5 ms | |
| SAI 041 | 4 safe analog current inputs 4-20 mA, 16 bits, +24 V DC | |
| STO 081 | 8 safe digital outputs +24 V DC, max 2 A, short-circuit proof | |
| SDM 081 | 6 safe digital inputs +24 V DC, 0.5 ms, 2 safe digital outputs +24 V DC, max 2 A | |
| SRO 021 | 2 safe relay outputs max. +30 V DC, max. 6 A | |
| SRO 022 | 2 safe relay outputs max. +230 V DC, max. 6 A | |
| SSI 021 | Evaluation of 2 SSI absolute encoder signals (up to 32 bits) | |
| SNC 021 | Evaluation of 2 incremental encoder signals (up to 12 bits), encoder supply +5 V, counter frequency 3 MHz | |



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