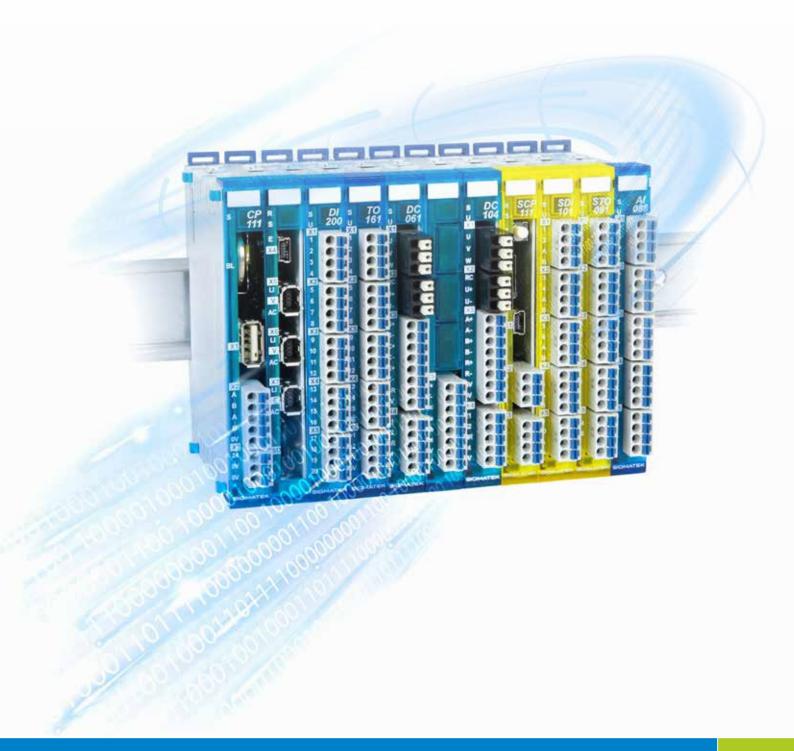


# CONTROL SYSTEM S-DIAS



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

## **ONE SYSTEM - MANY FUNCTIO**

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.

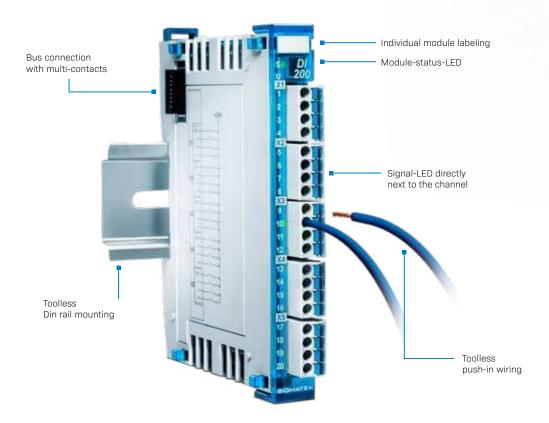
bility could be used because of space restrictions.

#### 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-

#### **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)** 

### NS



#### **HOT FACTS**

#### SUPER-COMPACT

up to 20 I/Os in a module size of only  $12.5 \times 104 \times 72 \text{ mm}$ 

#### **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

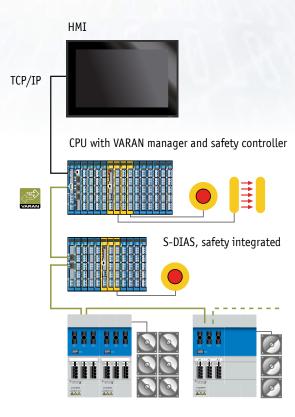
#### **FLEXIBLE SYSTEM DESIGN**

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.



Servo drives, safety integrated

## 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:



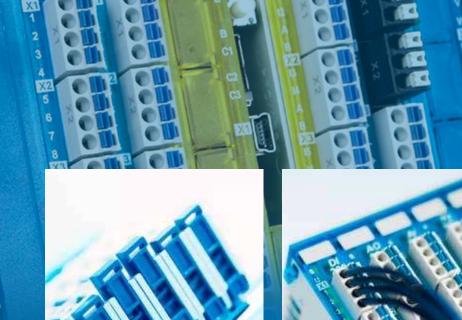
#### **Saves Space**

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.



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.







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/0 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.

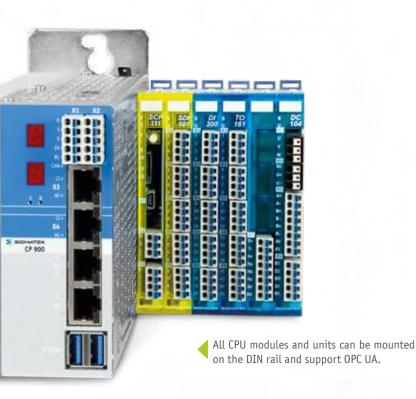
In addition to various safety I/Os, a relay, an SSI absolute value encoder and an incremental encoder module are available. The safety data is transmitted via VARAN, TCP/IP and wireless networks (WiFi) according to the Black Channel principle.

#### 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.



#### 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 µs) 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

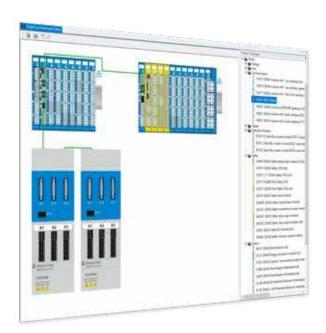
Safety function Safe Torque Off for applications up to SIL 3 (EN 62061) and Category 4, PL e (EN ISO 13849-1/2).

#### 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 differentia 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.



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



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

# 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 Conn		
CP 102	EDGE2 Technology processor, 1x Ethernet, 1x CAN, 1x USB OTG (0n-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	
P 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 into	tegrated
P 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	
P 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
P 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 Display	Port 1.4a
CD 022	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	
CP 933	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	
nterfaces & Spl	itters	
CA 011	1x CAN	
CA 012	1x CAN (galvanically separated)	
IO 041	4x SDCI ports according to IEC 61131-9 (IO-link), 4 digital inputs +24 V DC, 0.5 ms	
PN 021 / 021-1	1x Profinet I/O In, 1x Profinet I/O Out   IPN 021-1: identification parameters configurable	
SE 021	1x RS232, 1x RS485	
SE 031	1x RS232, 1x RS485, 1x TTY	
E 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		
080 IO	8 inputs +24 V DC, 5 ms	
OI 160	16 inputs +24 V DC, 5 ms	
OI 169	16 counter inputs, GND switching, +24 V DC, 50 μs	
OI 200	20 inputs +24 V DC, 5 ms	
OI 202	4 counter inputs +24 V DC, 10 μs, 16 inputs +24 V, 0.5 ms	
OI 203	20 inputs +24 V DC, 0.5 ms	
OI 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	20 mpass, 6.15 5 messing, 2 + 1 5 6, 5 ms	
TO 081	8 outputs +24 V DC, 0.5 A, short-circuit proof	
0 127	12 outputs +24 V DC, 1.7 A, short-circuit proof, outputs separated by optic coupler	
0 161	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 041	5 relay outputs +115 V AC, 6 A or +24 V AC, 6 A (changeover contacts)	
Digital Mix	Jietay outpus 113 v Ac, 0 A 01 124 v Ac, 0 A (changeover contacts)	
Ongital Mix OM 046	4 inputs +24 V DC, 5 ms, 4 outputs +24 V DC, 1.7 A, short-circuit proof, galvanically separated	
)M 040 )M 081	4 inputs +24 V DC, 5 ms, 4 outputs +24 V DC, 1.7 A, short-circuit proof, galvanically separated	
)M 1081	4 inputs + 24 V DC, 5 ms, 4 outputs +24 V DC, 0.5 A, short-circuit proof. 4 inputs + 24 V DC, 5 ms, 4 outputs +24 V DC, 0.5 A, short-circuit proof.	
OM 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	
OM 167	8 inputs +24 V DC, 5 ms, 8 outputs +24 V DC, 1.7 A, short-circuit proof, outputs separated with optic coupler	
Inalog Input	2 strain gauge inputs (24 hits)   AT 022; maggurament range ±1 975 to ±120 mV   AT 022 1 maggurament range ±1 25 to 90 mV	Λ.
I 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	TV.
I 023	2 inputs PT100/PT1000/KTY	0.0
I 031	3 inputs 0-5 A AC (12 bits)	<b>^</b> \^
I 040	4 inputs for vibration sensors with IEPE interface, condition monitoring	M
I 043	4 inputs PT100/PT1000/KTY	₩
NI 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	$\sim$
	8 inputs PT1000/KTY (16 bits)	
AI 0812 AI 084	8 inputs PT1000/KTY (16 bits) 8 inputs 0-20 mA (16 bits)	

A0 026	2 outputs ±10 V DC or 0-20 mA (16 bits), switchable per channel	ΛΛ
AO 046	4 outputs ±10.8 V DC or 0-21.6 mA (16 bit), switchable per channel	44
0 040	8 outputs ±10 V DC (12 bits)	V
nalog Mix		
M 221	2 inputs ±10 V DC (16 bits), 2 outputs ±10 V DC (12 bits), 1 reference output +10 V DC, max. 5 mA	
M 222	2 inputs 0-20 mA (16 bits), 2 outputs 0-20 mA (12 bits)	
M 441	4 inputs ±10 V (16 bits), 4 outputs ±10 V (12 bits), 1 reference output +10 V, max. 10 mA	
M 442	4 inputs 0-20 mA (16 bits), 4 output 0-20 mA (12 bits)	
igital Analog N		
0 011	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)	
0 011S	6 digital inputs (1 µs), 8 digital outputs (0.5 A), 1 analog input (±10 V DC), 1 analog current input (0-20 mA)	
ounter & Posit	tion Recording	
C 031	Gyroscope sensor, 1x Ethernet, 1x RS485	$\mathcal{N}$
I 204	2 ABR counter, TTL signal, 10 $\mu$ s, 14 digital inputs +24 V DC, 0.5 ms	
C 021	2 digital RS422 inputs, 2 digital TTL inputs galvanically separated, 2 digital HTL inputs galvanically separated, all inputs with counter function	$\mathbf{V}$
C 100	Incremental encoder, 1 ABR counter, TTL/RS422, encoder supply 5 V, 4 digital inputs +24 V, 10 µs, 4 digital outputs +24 V, 2 A	
I 021	2 SSI absolute encoders (up to 32 bits)	$\mathbf{V}$
S 041	Transsonar module for 4 distance measurement systems, DPI/IP protocol	$\mathbf{V}$
051	Transsonar module for 5 distance measurement systems, DPI/IP protocol	$\Psi$
lotion		
C 061-1	Servo motor output stage, resolver, 6 A continuous / 15 A peak current, +48 V DC, holding brake, STO	
C 062	Servo motor output stage, incremental encoder, 6 A continuous / 15 A peak current, +48 V DC, holding brake, STO	
C 06/	Servo motor output stage, universal / absolute encoder, 6 A continuous /15 A peak current, +48 V DC, holding brake, STO, brake chopper,	
C 064	motor temperature sensor input	
C 101	Servo motor output stage, resolver, 10 A continuous / 20 A peak current, +48 V DC, holding brake, STO	
C 102	Servo motor output stage, incremental encoder, 10 A continuous / 20 A peak current, +48 V DC, holding brake, STO	
C 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	
R 011	DC motor output stage, incremental encoder RS422/TTL, 5 A continuous / 15 A peak current, brake chopper, 2 enable inputs, 1 digital output	
R 012	DC motor output stage, 5 A continuous / 10 A peak current, brake chopper, 2 enable inputs, 4 digital inputs, 1 digital output	
R 020	DC motor current controller, 12-30 V DC supply, 0-3.5 A, power LED output 0-350 mA	
R 022	DC motor current controller, 12-30 V DC supply, 0-3.5 A, 1 incremental encoder, 3 digital inputs	
	DC motor current controller, 12-30 V DC supply, 0-3.5 A, 1 incremental encoder, 3 digital inputs  Stepper/servo motor power component control. 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs	
T 011	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs	
T 011 T 151	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper	ontrol
T 011 T 151 T 152	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop co	ontrol
T 011 T 151 T 152 pecial Functio	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop co	ontrol
T 011 T 151 T 152 <b>pecial Functio</b> 0 041	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop counts	ontrol
T 011 T 151 T 152 <b>pecial Functio</b> O 041 M 811	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop coins  4 current-controlled outputs / pulse-signal outputs for valve control, 4 digital inputs +5 V  1 absolute pressure input 0-1600 mbar, 1 PT100, 8 digital inputs +24 V DC, 0.5 ms	ontrol M
T 011 T 151 T 152 <b>pecial Functio</b> 0 041 M 811 M 822	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop control  4 current-controlled outputs / pulse-signal outputs for valve control, 4 digital inputs +5 V  1 absolute pressure input 0-1600 mbar, 1 PT100, 8 digital inputs +24 V DC, 0.5 ms  2 differential pressure inputs -2068 mbar +2068 mbar, 8 digital inputs +24 V DC, 0.5 ms	<b>₩</b>
T 011 T 151 T 152 <b>pecial Functio</b> 0 041 M 811 M 822 E 121-1	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop comes  4 current-controlled outputs / pulse-signal outputs for valve control, 4 digital inputs +5 V  1 absolute pressure input 0-1600 mbar, 1 PT100, 8 digital inputs +24 V DC, 0.5 ms  2 differential pressure inputs -2068 mbar +2068 mbar, 8 digital inputs +24 V DC, 0.5 ms  Energy recording, 3 voltage inputs (0-600 V AC, 16-bits), 12 current inputs (0-2 A AC, 16-bits), power grid synchronization	<b>₩</b>
T 011 T 151 T 152 <b>pecial Functio</b> O 041 M 811 M 822 E 121-1 Z 101	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop comes  4 current-controlled outputs / pulse-signal outputs for valve control, 4 digital inputs +5 V  1 absolute pressure input 0-1600 mbar, 1 PT100, 8 digital inputs +24 V DC, 0.5 ms  2 differential pressure inputs -2068 mbar +2068 mbar, 8 digital inputs +24 V DC, 0.5 ms  Energy recording, 3 voltage inputs (0-600 V AC, 16-bits), 12 current inputs (0-2 A AC, 16-bits), power grid synchronization  10 digital inputs for implementing Euromap interface	ontrol M M
T 011 T 151 T 152 pecial Functio 0 041 M 811 M 822 E 121-1 Z 101	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop comes  4 current-controlled outputs / pulse-signal outputs for valve control, 4 digital inputs +5 V  1 absolute pressure input 0-1600 mbar, 1 PT100, 8 digital inputs +24 V DC, 0.5 ms  2 differential pressure inputs -2068 mbar +2068 mbar, 8 digital inputs +24 V DC, 0.5 ms  Energy recording, 3 voltage inputs (0-600 V AC, 16-bits), 12 current inputs (0-2 A AC, 16-bits), power grid synchronization  10 digital inputs for implementing Euromap interface  10 digital outputs for implementing Euromap interface	<b>₩</b>
T 011 T 151 T 152 pecial Functio 0 041 M 811 M 822 E 121-1 Z 101 Z 102 Z 122	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop comes  4 current-controlled outputs / pulse-signal outputs for valve control, 4 digital inputs +5 V  1 absolute pressure input 0-1600 mbar, 1 PT100, 8 digital inputs +24 V DC, 0.5 ms  2 differential pressure inputs -2068 mbar +2068 mbar, 8 digital inputs +24 V DC, 0.5 ms  Energy recording, 3 voltage inputs (0-600 V AC, 16-bits), 12 current inputs (0-2 A AC, 16-bits), power grid synchronization  10 digital inputs for implementing Euromap interface  10 digital outputs for implementing Euromap interface	<b>₩</b>
T 011 T 151 T 152 pecial Functio 0 041 M 811 M 822 E 121-1 Z 101 Z 102 Z 122 L 090/KL 091	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop comes  4 current-controlled outputs / pulse-signal outputs for valve control, 4 digital inputs +5 V  1 absolute pressure input 0-1600 mbar, 1 PT100, 8 digital inputs +24 V DC, 0.5 ms  2 differential pressure inputs -2068 mbar +2068 mbar, 8 digital inputs +24 V DC, 0.5 ms  Energy recording, 3 voltage inputs (0-600 V AC, 16-bits), 12 current inputs (0-2 A AC, 16-bits), power grid synchronization  10 digital inputs for implementing Euromap interface  10 digital outputs for implementing Euromap interface	<b>₩</b>
T 011 T 151 T 152 pecial Functio 0 041 M 811 M 822 E 121-1 Z 101 Z 102 Z 122 L 090/KL 091 L 180	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop comes  4 current-controlled outputs / pulse-signal outputs for valve control, 4 digital inputs +5 V  1 absolute pressure input 0-1600 mbar, 1 PT100, 8 digital inputs +24 V DC, 0.5 ms  2 differential pressure inputs -2068 mbar +2068 mbar, 8 digital inputs +24 V DC, 0.5 ms  Energy recording, 3 voltage inputs (0-600 V AC, 16-bits), 12 current inputs (0-2 A AC, 16-bits), power grid synchronization  10 digital inputs for implementing Euromap interface  10 digital outputs for implementing Euromap interface  12 digital outputs for implementing Euromap interface  Potential distribution 9x 0 V (ground), 9x +24 V DC (supply), current limited; difference: connector layout  Potential distribution 18x 0 V ground	<b>₩</b>
T 011 T 151 T 152 pecial Functio 0 041 M 811 M 822 E 121-1 Z 101 Z 102 Z 122 L 090/KL 091 L 180 L 181	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop comes  4 current-controlled outputs / pulse-signal outputs for valve control, 4 digital inputs +5 V  1 absolute pressure input 0-1600 mbar, 1 PT100, 8 digital inputs +24 V DC, 0.5 ms  2 differential pressure inputs -2068 mbar +2068 mbar, 8 digital inputs +24 V DC, 0.5 ms  Energy recording, 3 voltage inputs (0-600 V AC, 16-bits), 12 current inputs (0-2 A AC, 16-bits), power grid synchronization  10 digital inputs for implementing Euromap interface  10 digital outputs for implementing Euromap interface  12 digital outputs for implementing Euromap interface  Potential distribution 9x 0 V (ground), 9x +24 V DC (supply), current limited; difference: connector layout  Potential distribution 18x +24 V DC (supply)	<b>₩</b>
T 011 T 151 T 152 pecial Functio 0 041 M 811 M 822 E 121-1 Z 101 Z 102 Z 122 L 090/KL 091 L 180 L 181 L 221	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop components  4 current-controlled outputs / pulse-signal outputs for valve control, 4 digital inputs +5 V  1 absolute pressure input 0-1600 mbar, 1 PT100, 8 digital inputs +24 V DC, 0.5 ms  2 differential pressure inputs -2068 mbar +2068 mbar, 8 digital inputs +24 V DC, 0.5 ms  Energy recording, 3 voltage inputs (0-600 V AC, 16-bits), 12 current inputs (0-2 A AC, 16-bits), power grid synchronization 10 digital inputs for implementing Euromap interface 10 digital outputs for implementing Euromap interface 12 digital outputs for implementing Euromap interface Potential distribution 9x 0 V (ground), 9x +24 V DC (supply), current limited; difference: connector layout Potential distribution 18x 0 V ground Potential distribution 18x +24 V DC (supply) 2 outputs RGB pixel LED strips (24 bits), 2 outputs +24 V PWM LED strips	<b>\</b>
T 011 T 151 T 152 pecial Functio 0 041 M 811 M 822 E 121-1 Z 101 Z 102 Z 122 L 090/KL 091 L 180 L 181 L 221 SB 001	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop constants  4 current-controlled outputs / pulse-signal outputs for valve control, 4 digital inputs +5 V  1 absolute pressure input 0-1600 mbar, 1 PT100, 8 digital inputs +24 V DC, 0.5 ms  2 differential pressure inputs -2068 mbar +2068 mbar, 8 digital inputs +24 V DC, 0.5 ms  Energy recording, 3 voltage inputs (0-600 V AC, 16-bits), 12 current inputs (0-2 A AC, 16-bits), power grid synchronization  10 digital inputs for implementing Euromap interface  10 digital outputs for implementing Euromap interface  12 digital outputs for implementing Euromap interface  Potential distribution 9x 0 V (ground), 9x +24 V DC (supply), current limited; difference: connector layout  Potential distribution 18x +24 V DC (supply)  2 outputs RGB pixel LED strips (24 bits), 2 outputs +24 V PWM LED strips  Expansion supply	V
T 011 T 151 T 152 pecial Functio 0 041 M 811 M 822 E 121-1 Z 101 Z 102 Z 122 L 090/KL 091 L 180 L 181 L 221 SB 001 C 001	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop come  4 current-controlled outputs / pulse-signal outputs for valve control, 4 digital inputs +5 V  1 absolute pressure input 0-1600 mbar, 1 PT100, 8 digital inputs +24 V DC, 0.5 ms  2 differential pressure inputs -2068 mbar +2068 mbar, 8 digital inputs +24 V DC, 0.5 ms  Energy recording, 3 voltage inputs (0-600 V AC, 16-bits), 12 current inputs (0-2 A AC, 16-bits), power grid synchronization  10 digital inputs for implementing Euromap interface  10 digital outputs for implementing Euromap interface  12 digital outputs for implementing Euromap interface  Potential distribution 9x 0 V (ground), 9x +24 V DC (supply), current limited; difference: connector layout  Potential distribution 18x 0 V ground  Potential distribution 18x +24 V DC (supply)  2 outputs RGB pixel LED strips (24 bits), 2 outputs +24 V PWM LED strips  Expansion supply  1x real-time clock	V
T 011 T 151 T 152 pecial Functio 0 041 M 811 M 822 E 121-1 Z 101 Z 102 Z 122 L 090/KL 091 L 180 L 181 L 221 SB 001 C 001 A 011	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop consecurity.  4 current-controlled outputs / pulse-signal outputs for valve control, 4 digital inputs +5 V  1 absolute pressure input 0-1600 mbar, 1 PT100, 8 digital inputs +24 V DC, 0.5 ms  2 differential pressure inputs -2068 mbar +2068 mbar, 8 digital inputs +24 V DC, 0.5 ms  Energy recording, 3 voltage inputs (0-600 V AC, 16-bits), 12 current inputs (0-2 A AC, 16-bits), power grid synchronization  10 digital inputs for implementing Euromap interface  10 digital outputs for implementing Euromap interface  12 digital outputs for implementing Euromap interface  Potential distribution 9x 0 V (ground), 9x +24 V DC (supply), current limited; difference: connector layout  Potential distribution 18x +24 V DC (supply)  2 outputs RGB pixel LED strips (24 bits), 2 outputs +24 V PWM LED strips  Expansion supply  1x real-time clock  VARAN Analyzer, 1x VARAN In (RJ45), 1x VARAN Out (RJ45), 1x Gigabit Ethernet 10/100/1000	<b>\</b>
T 011 T 151 T 152 Pecial Functio 0 041 M 811 M 822 E 121-1 Z 101 Z 102 Z 122 L 090/KL 091 L 180 L 181 L 221 SB 001 C 001 A 011 L 011	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop come  4 current-controlled outputs / pulse-signal outputs for valve control, 4 digital inputs +5 V  1 absolute pressure input 0-1600 mbar, 1 PT100, 8 digital inputs +24 V DC, 0.5 ms  2 differential pressure inputs -2068 mbar +2068 mbar, 8 digital inputs +24 V DC, 0.5 ms  Energy recording, 3 voltage inputs (0-600 V AC, 16-bits), 12 current inputs (0-2 A AC, 16-bits), power grid synchronization  10 digital inputs for implementing Euromap interface  10 digital outputs for implementing Euromap interface  12 digital outputs for implementing Euromap interface  Potential distribution 9x 0 V (ground), 9x +24 V DC (supply), current limited; difference: connector layout  Potential distribution 18x +24 V DC (supply)  2 outputs RGB pixel LED strips (24 bits), 2 outputs +24 V PWM LED strips  Expansion supply  1x real-time clock  VARAN Analyzer, 1x VARAN In (RJ45), 1x VARAN Out (RJ45), 1x Gigabit Ethernet 10/100/1000  Placeholder for expansions	N N
T 011 T 151 T 152 Pecial Functio O 041 M 811 M 822 E 121-1 Z 101 Z 102 Z 122 L 090/KL 091 L 180 L 181 L 221 SB 001 C 001 A 011 L 011 afety	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop come  4 current-controlled outputs / pulse-signal outputs for valve control, 4 digital inputs +5 V  1 absolute pressure input 0-1600 mbar, 1 PT100, 8 digital inputs +24 V DC, 0.5 ms  2 differential pressure inputs -2068 mbar +2068 mbar, 8 digital inputs +24 V DC, 0.5 ms  Energy recording, 3 voltage inputs (0-600 V AC, 16-bits), 12 current inputs (0-2 A AC, 16-bits), power grid synchronization  10 digital inputs for implementing Euromap interface  10 digital outputs for implementing Euromap interface  12 digital outputs for implementing Euromap interface  Potential distribution 9x 0 V (ground), 9x +24 V DC (supply), current limited; difference: connector layout  Potential distribution 18x +24 V DC (supply)  2 outputs RGB pixel LED strips (24 bits), 2 outputs +24 V PWM LED strips  Expansion supply  1x real-time clock  VARAN Analyzer, 1x VARAN In (RJ45), 1x VARAN Out (RJ45), 1x Gigabit Ethernet 10/100/1000  Placeholder for expansions  up to SIL 3 according to IEC 62061 and EN ISO 13849-1/-2, PL e, Cat. 4	IV IV
T 011 T 151 T 152 Pecial Functio 0 041 M 811 M 822 E 121-1 Z 101 Z 102 Z 122 L 090/KL 091 L 180 L 181 L 221 SB 001 C 001 A 011 L 011 afety CP 111	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop come  4 current-controlled outputs / pulse-signal outputs for valve control, 4 digital inputs +5 V  1 absolute pressure input 0-1600 mbar, 1 PT100, 8 digital inputs +24 V DC, 0.5 ms  2 differential pressure inputs -2068 mbar +2068 mbar, 8 digital inputs +24 V DC, 0.5 ms  Energy recording, 3 voltage inputs (0-600 V AC, 16-bits), 12 current inputs (0-2 A AC, 16-bits), power grid synchronization  10 digital inputs for implementing Euromap interface  10 digital outputs for implementing Euromap interface  12 digital outputs for implementing Euromap interface  Potential distribution 9x 0 V (ground), 9x +24 V DC (supply), current limited; difference: connector layout  Potential distribution 18x 0 V ground  Potential distribution 18x 0 V ground  Potential distribution 18x +24 V DC (supply)  2 outputs RGB pixel LED strips (24 bits), 2 outputs +24 V PWM LED strips  Expansion supply  1x real-time clock  VARAN Analyzer, 1x VARAN In (RJ45), 1x VARAN Out (RJ45), 1x Gigabit Ethernet 10/100/1000  Placeholder for expansions  up to SIL 3 according to IEC 62061 and EN ISO 13849-1/-2, PL e, Cat. 4  Safety controller, 1x USB device, microSD slot, Flash 224 kbyte, SRAM 24 kbyte, total current 800 mA	N N
T 011 T 151 T 151 T 152 pecial Functio 0 041 M 811 M 822 E 121-1 Z 101 Z 102 Z 122 L 090/KL 091 L 180 L 181 L 221 SSB 001 C 001 A 011 L 011 afety CP 111	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop compared to the control of th	IV IV
T 011 T 151 T 152 pecial Functio 0 041 M 811 M 822 E 121-1 Z 101 Z 102 Z 122 L 090/KL 091 L 180 L 181 L 221 SB 001 C 001 A 011 L 011 afety CP 111 CP 211 DI 101	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop cores  ***  **A current-controlled outputs / pulse-signal outputs for valve control, 4 digital inputs +5 V  1 absolute pressure input 0-1600 mbar, 1 PT100, 8 digital inputs +24 V DC, 0.5 ms  2 differential pressure input 0-1600 mbar, 1 PT100, 8 digital inputs +24 V DC, 0.5 ms  Energy recording, 3 voltage inputs (0-600 V AC, 16-bits), 12 current inputs (0-2 A AC, 16-bits), power grid synchronization  10 digital inputs for implementing Euromap interface 11 digital outputs for implementing Euromap interface 12 digital outputs for implementing Euromap interface Potential distribution 9x 0 V (ground), 9x +24 V DC (supply), current limited; difference: connector layout Potential distribution 18x 0 V ground Potential distribution 18x +24 V DC (supply) 2 outputs RGB pixel LED strips (24 bits), 2 outputs +24 V PWM LED strips Expansion supply 1x real-time clock VARAN Analyzer, 1x VARAN In (RJ45), 1x VARAN Out (RJ45), 1x Gigabit Ethernet 10/100/1000 Placebolder for expansions  **Up to SIL 3 according to IEC 62061 and EN ISO 13849-1/-2, PL e, Cat. 4 Safety controller, 1x USB device, microSD slot, Flash 224 kbyte, SRAM 24 kbyte, total current 800 mA Safety controller, 1x USB device, microSD slot, Flash 1 Mbyte, SRAM 500 kbyte, total current 1600 mA  10 safe digital inputs +24 V DC, 0.5 ms	N N N
T 011 T 151 T 152 pecial Functio 0 041 M 811 M 822 E 121-1 Z 101 Z 102 Z 122 L 090/KL 091 L 180 L 181 L 221 SB 001 C 001 A 011 L 011 afety CP 111 CP 211 DI 101 AI 041	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop of the control output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop of the control outputs of valve control, 4 digital inputs +5 V  1 absolute pressure input 0-1600 mbar, 1 PT100, 8 digital inputs +24 V DC, 0.5 ms  2 differential pressure inputs -2068 mbar +2068 mbar, 8 digital inputs +24 V DC, 0.5 ms  Energy recording, 3 voltage inputs (0-600 V AC, 16-bits), 12 current inputs (0-2 A AC, 16-bits), power grid synchronization  10 digital inputs for implementing Euromap interface  10 digital outputs for implementing Euromap interface  12 digital outputs for implementing Euromap interface  Potential distribution 9x 0 V (ground), 9x +24 V DC (supply), current limited; difference: connector layout  Potential distribution 18x +24 V DC (supply)  2 outputs RGB pixel LED strips (24 bits), 2 outputs +24 V PWM LED strips  Expansion supply  1x real-time clock  VARAN Analyzer, 1x VARAN In (R345), 1x VARAN Out (R345), 1x Gigabit Ethernet 10/100/1000  Placeholder for expansions  up to SIL 3 according to IEC 62061 and EN ISO 13849-1/-2, PL e, Cat. 4  Safety controller, 1x USB device, microSD slot, Flash 1 Mbyte, SRAM 24 kbyte, total current 800 mA  Safety controller, 1x USB device, microSD slot, Flash 1 Mbyte, SRAM 500 kbyte, total current 1600 mA  10 safe digital inputs +24 V DC, 0.5 ms  4 safe analog current inputs 4-20 mA, 16 bits, +24 V DC	IV IV
T 011 T 151 T 152 pecial Functio 0 041 M 811 M 822 E 121-1 Z 101 Z 102 Z 122 L 090/KL 091 L 180 L 181 L 221 SB 001 C 001 A 011 L 011 afety CP 111 CP 211 DI 101 AI 041 TO 081	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper  Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop of the control output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop of the control outputs of the control outputs of valve control, 4 digital inputs +5 V  1 absolute pressure input 0-1600 mbar, 1 PT100, 8 digital inputs +24 V DC, 0.5 ms  2 differential pressure inputs -2068 mbar +2068 mbar, 8 digital inputs +24 V DC, 0.5 ms  Energy recording, 3 voltage inputs (0-600 V AC, 16-bits), 12 current inputs (0-2 A AC, 16-bits), power grid synchronization  10 digital inputs for implementing Euromap interface  10 digital outputs for implementing Euromap interface  12 digital outputs for implementing Euromap interface  Potential distribution 9x 0 V (ground), 9x +24 V DC (supply), current limited; difference: connector layout  Potential distribution 18x 0 V ground  Potential distribution 18x 24 V DC (supply)  2 outputs RGB pixel LED strips (24 bits), 2 outputs +24 V PWM LED strips  Expansion supply  1x real-time clock  VARAN Analyzer, 1x VARAN In (RJ45), 1x VARAN Out (RJ45), 1x Gigabit Ethernet 10/100/1000  Placeholder for expansions  up to SIL 3 according to IEC 62061 and EN ISO 13849-1/-2, PL e, Cat. 4  Safety controller, 1x USB device, microSD slot, Flash 1 Mbyte, SRAM 500 kbyte, total current 800 mA  Safety controller, 1x USB device, microSD slot, Flash 1 Mbyte, SRAM 500 kbyte, total current 1600 mA  10 safe digital inputs +24 V DC, 0.5 ms  4 safe analog current inputs 4-20 mA, 16 bits, +24 V DC  8 safe digital outputs +24 V DC, max 2 A, short-circuit proof	IV IV
GR 022 GT 011 GT 151 GT 152 Gpecial Functio GO 041 GM 811 GM 822 GE 121-1 GZ 102 GZ 122 GL 090/KL 091 GL 180 GL 181 GZ 001 GZ 00	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop or  stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop or  stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop or  stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop or  stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper  stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper  stepper motor outputs for outputs, enable inputs, stepper device inputs, closed-loop of current inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop of current inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop of current inputs (STO), 2 latch/digital inputs +2 V DC, 0.5 ms  differential puts +24 V DC, 0.5 ms  safe digital inputs +24 V DC, 0.5 ms  safe digital outputs +24 V DC, 0.5 ms, 2 safe digital outputs +24 V DC, max 2 A, short-circuit proof  safe digital inputs +24 V DC, 0.5 ms, 2 safe digital outputs +24 V DC, max 2 A, short-circuit proof  safe digital inputs +24 V DC, 0.5 ms, 2 safe digital outputs +24 V DC, max 2 A	\(\frac{1}{V}\)
T 011 T 151 T 152 pecial Functio 0 041 M 811 M 822 E 121-1 Z 101 Z 102 Z 122 IL 090/KL 091 IL 180 IL 181 L 221 SB 001 IC 001 A 011 IL 011 Fafety CP 111 CP 211 DI 101 AI 041 TO 081 DM 081 RO 021	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop constants  4 current-controlled outputs / pulse-signal outputs for valve control, 4 digital inputs +5 V  1 absolute pressure input 0-1600 mbar, 1 PT100, 8 digital inputs +24 V DC, 0.5 ms  2 differential pressure inputs -2068 mbar, 2068 mbar, 8 digital inputs +24 V DC, 0.5 ms  Energy recording, 3 voltage inputs (0-600 V AC, 16-bits), 12 current inputs (0-2 A AC, 16-bits), power grid synchronization  10 digital inputs for implementing Euromap interface 10 digital outputs for implementing Euromap interface 12 digital outputs for implementing Euromap interface 12 digital outputs for implementing Euromap interface 14 distribution 9x 0 V (ground), 9x +24 V DC (supply), current limited; difference: connector layout  Potential distribution 18x 0 V ground  Potential distribution 18x +24 V DC (supply)  2 outputs RGB pixel LED strips (24 bits), 2 outputs +24 V PWM LED strips  Expansion supply  1x real-time clock  WARAN Analyzer, 1x VARAN In (RJ45), 1x VARAN Out (RJ45), 1x Gigabit Ethernet 10/100/1000  Placeholder for expansions  up to SIL 3 according to IEC 62061 and EN ISO 13849-1/-2, PL e, Cat. 4  Safety controller, 1x USB device, microSD slot, Flash 224 kbyte, SRAM 500 kbyte, total current 800 mA  Safety controller, 1x USB device, microSD slot, Flash 224 kbyte, SRAM 500 kbyte, total current 1600 mA  10 safe digital inputs +24 V DC, 0.5 ms  4 safe analog current inputs 4-20 mA, 16 bits, +24 V DC  8 safe digital outputs +24 V DC, 0.5 ms, 2 safe digital outputs +24 V DC, max 2 A, short-circuit proof  6 safe digital outputs max. +30 V DC, max. 6 A	N N
T 011 T 151 T 152  C pecial Function T 0041 T 180 T 18	Stepper/servo motor power component control, 1 incremental encoder, 2 digital inputs, 2 potential-free digital outputs Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper Stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop or  stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop or  stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop or  stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop or  stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper  stepper motor output stage, +50 V DC, 5 A, incremental encoder, 2 enable inputs (STO), 2 latch/digital inputs, brake chopper  stepper motor outputs for outputs, enable inputs, stepper device inputs, closed-loop of current inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop of current inputs (STO), 2 latch/digital inputs, brake chopper, closed-loop of current inputs (STO), 2 latch/digital inputs +2 V DC, 0.5 ms  differential puts +24 V DC, 0.5 ms  safe digital inputs +24 V DC, 0.5 ms  safe digital outputs +24 V DC, 0.5 ms, 2 safe digital outputs +24 V DC, max 2 A, short-circuit proof  safe digital inputs +24 V DC, 0.5 ms, 2 safe digital outputs +24 V DC, max 2 A, short-circuit proof  safe digital inputs +24 V DC, 0.5 ms, 2 safe digital outputs +24 V DC, max 2 A	N N

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