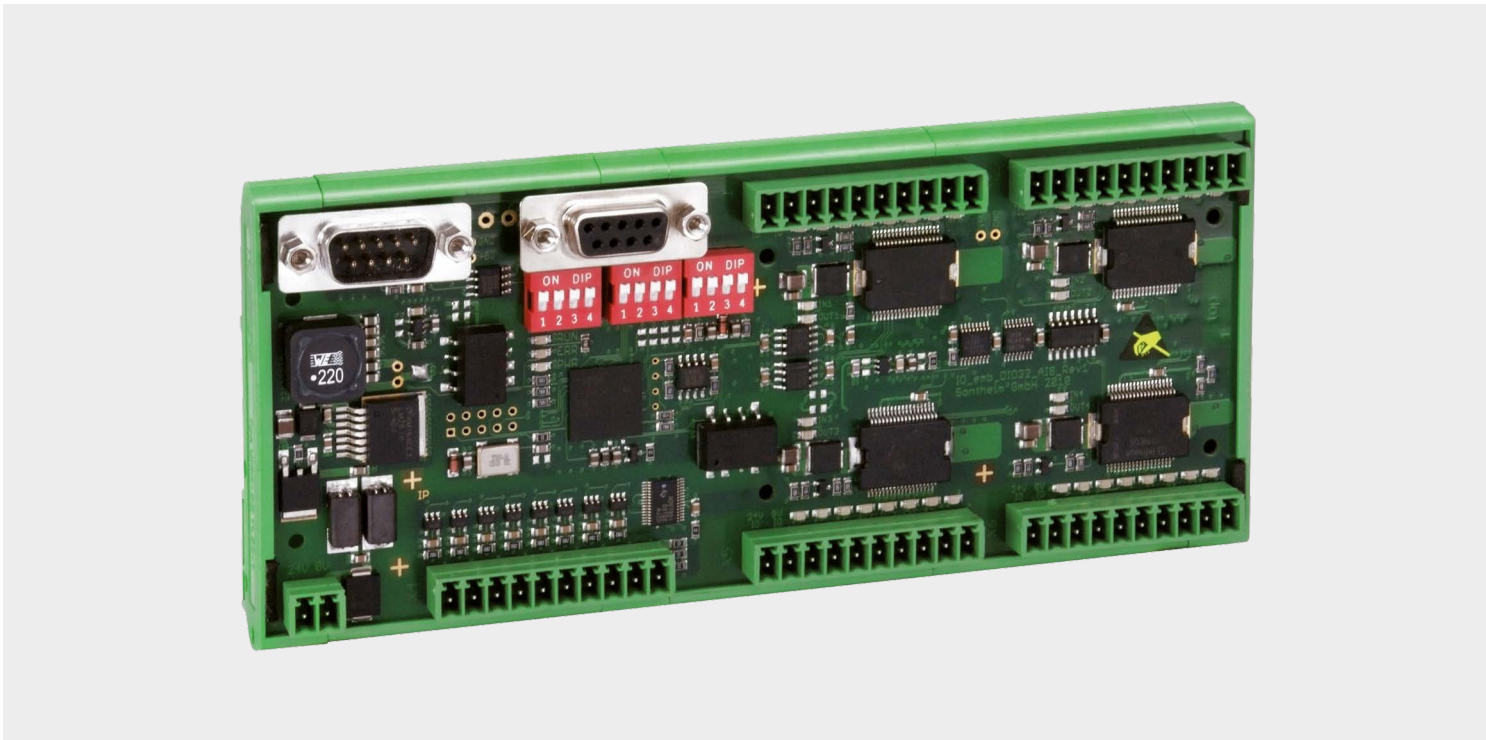
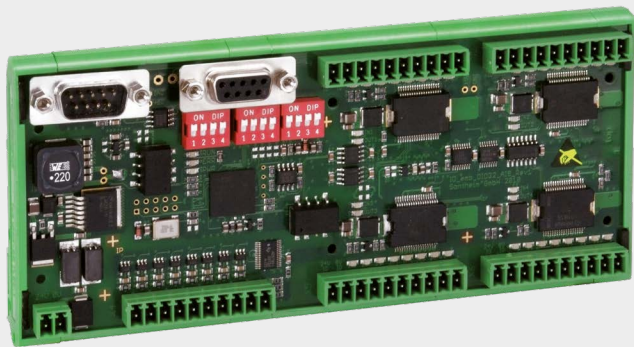


# Embedded-IO

Small, fast, cost-saving





# Embedded-IO

The entire light series was designed for maximum cost savings at the same high performance. So far, it covers modules for signal processing of relays, temperature sensors and digital inputs and outputs. All the modules have an open and slim chassis design, which is clearly designed for the installation in the control cabinet.

## Key Features



**CANopen according to CiA Draft Standard DS 301 and DS 401**



**Short signal delay**



**Short circuit proof outputs**



**CAN baud rate up to 1 Mbit/s**



**Small dimensions**



**Simple top hat rail mounting**

## Interfaces

The modules are compact and they have comfortable design, which provides all the interfaces, LEDs and required switches on the front panel. Another feature is the integrated top hat rail mounting, which permits an easy mounting and dismounting.

## LEDs and switches

The visualization of the status and current IO states successes via integrated LEDs for each IO. Configuring the module address and baud rate can be made easily and safely via DIP switches on the module. Thereby, a baud rate of up to 1 Mbit/s is adjustable according to CiA.

## In- and outputs

The modules are available in partly configurable models with digital or analog inputs and outputs. They are galvanically isolated and short-circuit-proofed and guarantee a high reliability and resiliency. The wide input voltage range of 12 V DC to 30 V DC, open up wide areas of applications.

## Signal processing

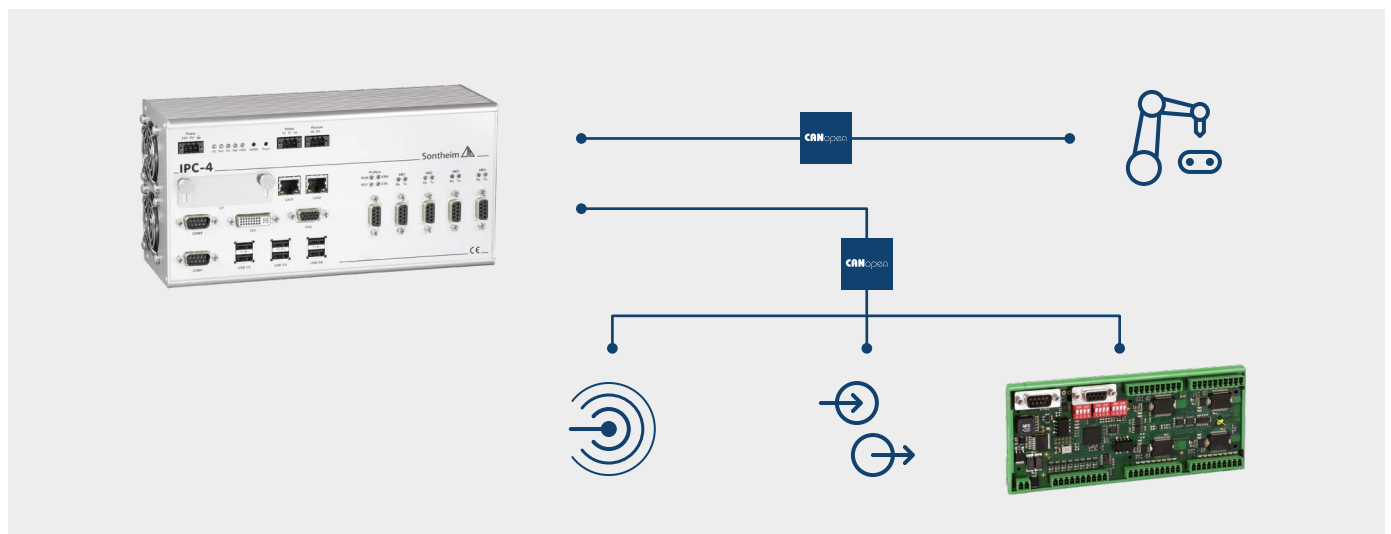
In addition to the inputs and outputs, the module has a powerful microcontroller, worked on the acquisition of the sensors, the control of actuators and the CAN protocol. Further, security mechanisms such as e.g. guarding are fully integrated into the remote IO.

## CAN interface

The integrated CAN interface according to CANopen (DS 301 and 401) allows flexible use at different locations and positions in the production process. It is executed according to ISO 11898 and can be bridged. In this way, you can use several modules in series by looping through the CAN signals.

## Example of an automation application

IPC-4 is a master unit in the automation system and handles the control as well as the sensors and actors in a fieldbus network.



## Combine the light modules with IPC-4 as a master in the CAN network

In its latest generation the IPC-4 combines the know-how of a system provider with the latest technology and is perfectly tailored for applications in the automation and automotive industry.

The new IPC with its scalable performance, clearly deposits itself from the competition. Computing power as well as the type and number of interfaces are offering immense possibilities for individual adjustment, for a maximum of flexibility. The housing is of course suitable for top hat rail mounting and allows an access to all ports on the front panel. This ensures a comfortable handling and avoids messy cabling.

## Technical Data

Module overview	DIO32-L	DIO32 8AI-L	AIO16-L
CAN	1x CAN interface acc. to ISO 11898, assignment acc. to DIN 41652, connection with D-Sub9 plug and socket (bridged)		
CAN protocol	DS 301 and 401		
Number of modules/bus	127		
Setting	of module address via 2 HEX switches, of baud rate via HEX switch		
Connection system	Clamping range 0.25 – 1.5 mm <sup>2</sup> , solid wire		
Connection type	Spring connection		
Connection technology	Two-, three-wire connection, stripping length 10 mm	one-wire connection, stripping length 10 mm	
Operating system display	1x LED green for operating mode (run) 1x LED red for error status (err) 32x LED green for set in- and outputs	1x LED green for operating mode (run) 1x LED red for error status (err) 1x LED green for supply voltage 32x LED green for set in- and outputs	1x LED green for operating mode (run) 1x LED red for error status (err) 1x LED green for supply voltage
Dimensions (l×w×h)	147 mm × 77 mm × 37 mm	166 mm × 72 mm × 37 mm	147 mm × 77 mm × 37 mm
Weight	155 g without clamps	102 g without clamps	
Type of installation	Top hat rail		
Storage temperature	–20 °C up to +70 °C		
Operating temperature	0 °C up to +60 °C (extended temperature range is optionally available)		
Humidity	90 % non-condensing		
Conformity EMC-requirements	EN 61000-6-4 and EN 61000-6-2 (Industrial sector)		
Power supply	12 V DC up to 30 V DC	12 V DC ±20 % and 24 V DC ±20 %	
Current	30 mA 350 mA (all in- and outputs active, including LEDs)	90 mA 220 mA (All in- and outputs active, including LEDs)	
Digital inputs	DIO32-L	DIO32 8AI-L	AIO16-L
Number of inputs	16	0–32, configurable in 8-blocks	–
Switching level "1"	+8.0 V up to +30.0 V	+11.0 V up to +28.8 V	–
Switching level "0"	0.0 V up to +4.0 V	0.0 V up to +5.0 V	–
Potential isolation	Capacitive coupler		–
Input current/input	3.0 / 6.5 mA	4 mA	–
Sampling frequency	2.5 kHz	1 kHz	–
Signal delay	< 100 µs		–
Digital outputs	DIO32-L	DIO32 8AI-L	AIO16-L
Number of outputs	16	0–32, configurable in 8-blocks	–
Circuit type	FET-Highside-Switch		–
Potential isolation	Capacitive coupler		–
min. output voltage	VB – 0.85 V	VB – 0.16 V DC	–
max. output current per channel	600 mA	625 mA	–
max. total output current	8 A	16 A	–
Protective shutdown	Short circuit and overload protection		–
Switching frequency	1 kHz		–
Free-wheeling diodes	Yes, controlled inductors require external freewheel diodes		–
Signal delay	< 100 µs		–
Analog inputs	DIO32-L	DIO32 8AI-L	AIO16-L
Number of inputs	–	8	
Resolution	–	12 bit	
Potential isolation	–	Capacitive coupler	
Input voltage	–	If required with assembly option: current input: 4 to 20 mA (not standard)	
Samplerate	–	1 kHz	
Analog outputs	DIO32-L	DIO32 8AI-L	AIO16-L
Number of outputs	–	8	
Resolution	–	12 bit	
Potential isolation	–	Capacitive coupler	
Output voltage	–	0–10 V DC	
I <sub>out</sub> Max	–	250 mA per output	

## DIO32-L

## DIO32 8AI-L

## AIO16-L



### Pin assignment DIO32-L



#### DIP switch module address

Minimum 01 HEX	1
Maximum 7F HEX	127



#### DIP switch baud rate (in Kbit/s)

0	50
1	125
3	250
4	500
5	1000



#### CAN D-Sub9

1	-
2	CAN low
3	CAN GND
4	-
5	-
6	-
7	CAN high
8	-
9	-



#### Clamp block

1	E1.0	Digital input / output 1.0
2	E1.1	Digital input / output 1.1
3	E1.2	Digital input / output 1.2
4	E1.3	Digital input / output 1.3
5	E1.4	Digital input / output 1.4
6	E1.5	Digital input / output 1.5
7	E1.6	Digital input / output 1.6
8	E1.7	Digital input / output 1.7

### Pin assignment DIO32-8AI-L, AIO16-L



#### DIP switch module address

Minimum 01 HEX	1
Maximum 7F HEX	127



#### DIP switch baud rate (in Kbit/s)

0	50
1	125
3	250
4	500
5	1000



#### CAN D-Sub9

1	-
2	CAN low
3	CAN GND
4	-
5	-
6	-
7	CAN high
8	-
9	-

### Order information

V965100000	DIO32-L
V965100100	DIO32 8AI-L
V930250210	DIO32 8AI-L (4× Spannungs- & 4× Stromeingänge)
V965100200	AIO16-L



**Mobile Automation**



**Industrial Automation**



**Diagnostics**



**Connectivity**

**We are looking forward to your enquiry!**

**Sontheim Industrie Elektronik GmbH**

Georg-Krug-Straße 2  
D-87437 Kempten  
Phone: +49 (0)831 575900-0  
Fax: +49 (0)831 575900-72  
Email: [info@s-i-e.de](mailto:info@s-i-e.de)

**Sontheim Electronic Systems L.P.**

201 West 2nd Street  
Davenport, IA 52801, USA  
Phone: +1 563 888 1471  
Email: [info@sontheim-esys.com](mailto:info@sontheim-esys.com)

[www.s-i-e.de](http://www.s-i-e.de)