

MINIMASTER Input / Output Module for CANopen IN 5509



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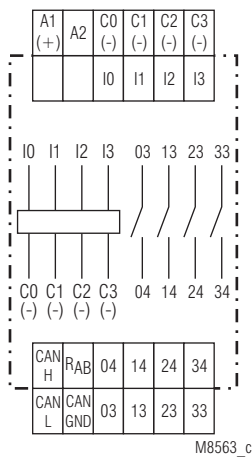
Your Advantages

- Compact structure
- Easy installation

Features

- According to IEC/EN 61131-2
- CANopen interface according to DS 301 version 3.0, DS 401
- 4 digital inputs for DC 24 V
- 4 relay outputs
- LED indicators
- 52.5 mm width

Circuit Diagram



IN 5509.23

Approvals and Markings



Application

The digital input modules collect signals of a control circuit from limit switches, push buttons, sensors etc. With the relay outputs the signals for a control system are switched. The IN 5509 is used in industrial control circuits and building automation.

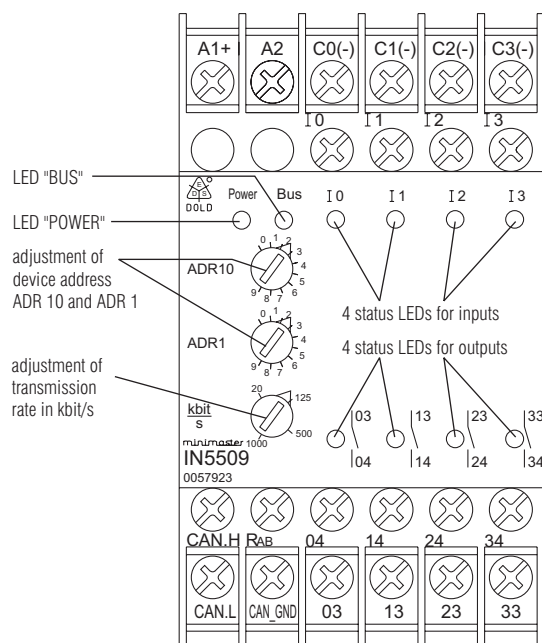
Indicators

- | | |
|---|--|
| Yellow LED "Power": | On, when supply connected |
| Yellow LED "BUS": | On, when BUS is active, pulsing when bus is inactive |
| Green status LEDs I ₀ ... I ₃ : | On, when input active |
| Red LEDs: | On, when output relay active |

Connection Terminals

Terminal designation	Signal description
A1+, A2	Auxiliary voltage DC 24 V
In / Cn(-) with n = 0 ... 3	Digital input 0 ... 3
n3 / n4 with n = 0 ... 3	Relay output NO contact 0 ... 3
CAN_L, CAN_H	Signal line CAN-Bus
CAN_GND	Reference potential CAN-Bus
R _{AB}	Terminal resistor CAN-Bus

Setting and Adjustment



M6820

CANopen-mode

The configuration is made with the programming software PN 5501 in conjunction with minimaster IL 5504 / IN 5504 or e.g. with ProCANopen. The corresponding configuration file on CD can be ordered under order no. PN 5501, article no. 0052860

Set-up procedure

1. Connect device to CANopen-bus
2. Terminate bus on both ends with bridge between CAN-H and R_{ab} on first and last module.
3. Adjust transmission speed (e. g. 20 K bit / s)
4. Adjust device addresses
5. Configure bus

Technical Data

Auxiliary voltage

Auxiliary voltage U_H A1/A2:	DC 24 V
Voltage range:	0.8 ... 1.1 U _N
Nominal consumption:	0.5 W DC 24 V

Input

Inputs:	4 digital inputs	IEC/EN 61131-2
	galvanic separation	
	DC 24 V	
Input voltage:	Acc. to ISO 11898-1, galvanic separated	
CANopen interface:	Screened twisted pair	
Wire:	Adjustable 20 kbit/s, 125 kbit/s,	
Transmission speed:	500 kbit/s, 1 Mbit/s,	
Max. buslength:	20 kbit/s = 2500 m	
	125 kbit/s = 500 m	
	500 kbit/s = 90 m	
	1 Mbit/s = 15 m	

Attention:



Both ends of the 2-wire bus have to be terminated with a bridge between CAN_H and R_{ab}.

Output

Contacts:	4 NO contacts	IEC/EN 61131-2
Thermal current I_{th}:	2 A	
Switching capacity		
To AC 15:	3 A / AC 230 V	IEC/EN 60947-5-1
To DC 13:	2 A / DC 24 V	IEC/EN 60947-5-1
Switching capacity		
At AC 230 V:	460 VA	
At DC 24 V:	48 W	
Short circuit strength		
Max. fuse rating:	4 A gG / gL	IEC/EN 60947-5-1
Mechanical life:	>10 ⁸ switching cycles	

General Data

Operating mode:	Continuous operation	
Temperatur range		
Operation:	- 20 ... + 60°C	
Storage:	- 40 ... + 70°C	
Altitude:	≤ 2000 m	
Clearance and creepage distances		
(between output contact and logic)		
Rated impulse voltage / pollution degree:	4 kV / 2	IEC 60664-1
EMC		
Electrostatic discharge:	8 kV (air)	IEC/EN 61000-4-2
HF-irradiation:	10 V / m	IEC/EN 61000-4-3
Fast transients:	2 kV	IEC/EN 61000-4-4
Surge voltages between wires for power supply:	500 V	IEC/EN 61000-4-5
Between wire and ground:	2 kV	IEC/EN 61000-4-5
Immunity to conducted disturbances, induced by radio-frequency fields:	10 V Class 3	IEC/EN 61000-4-6
	f = 150 kHz ... 80 MHz	
Interference suppression:	Limit value class B	EN 55011
Degree of protection		
Housing:	IP 40	IEC/EN 60529
Terminals:	IP 20	IEC/EN 60529
Housing:	Thermoplast mit V0 behaviour according to UL subject 94	
Vibration resistance:	Amplitude 0.35 mm frequency 10 ... 55 Hz	IEC/EN 60068-2-6
	20 / 060 / 04	IEC/EN 60068-1
Climate resistance:		
Terminal designation:	EN 50005	
Wire connection:	2 x 2.5 mm ² solid or 2 x 1.5 mm ² stranded ferruled	
	DIN 46228-1/-2/-3/-4	
Wire fixing:	Terminal screws M3.5, box terminals with wire protection	
Mounting:	DIN rail	IEC/EN 60715
Weight:	180 g	

Dimensions

Width x height x depth:	52.5 x 90 x 58 mm
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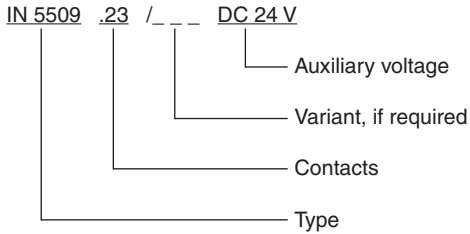
Standard Type

IN 5509.23/100 DC 24 V
 Article number: 0055929
 • 4 Digital inputs
 • 4 Relay outputs
 • Nominal voltage U_N : DC 24 V
 • Width: 52.5 mm

Variant

IN 5509.23 DC 24 V: With not galvanic separated CANopen interface

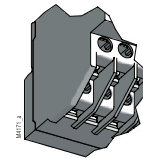
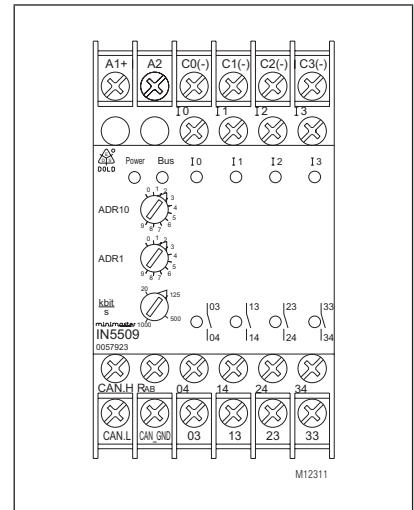
Ordering Example for Variant



Accessories

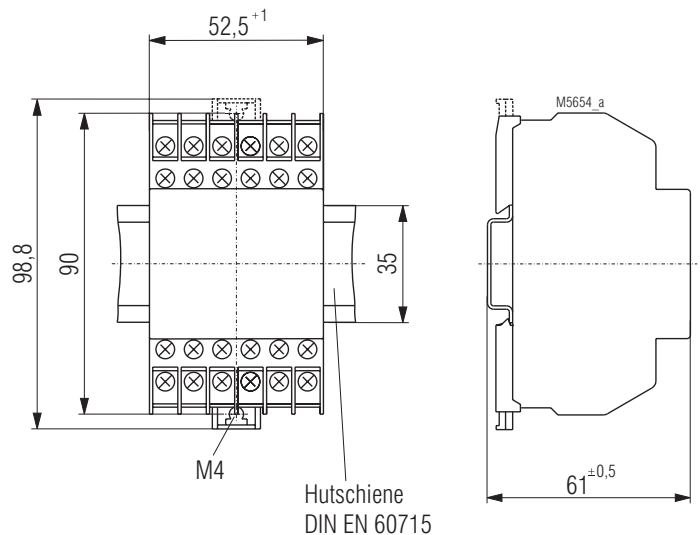
- CANopen PLC IL 5504
- Input / Output Module IN 5509
- Input Module, Digital IP 5502
- Output Module, Digital IP 5503
- Input Module, Analogue IL 5508
- Output Module, Analogue IL 5507

Labeling and Connections

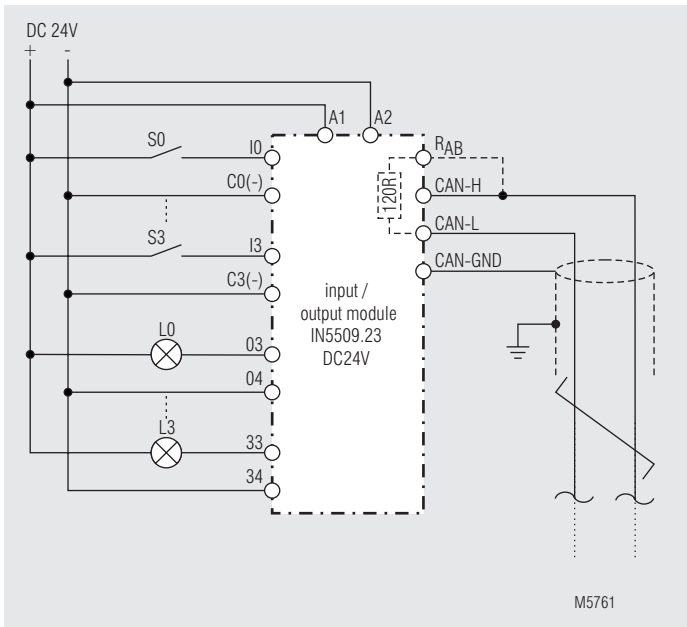


	<p>∅ 6 mm / PZ 2 0.8 Nm 7 LB. IN</p>
	<p>A = 10 mm 2 x 0,5 ... 2.5 mm² 2 x AWG 20 to 14 min. ∅ 0.1 mm = AWG 26</p>
	<p>A = 10 mm 2 x 0.5 ... 1.5 mm² 2 x AWG 20 to 16</p>

Dimensions (dimensions in mm)



Application Example



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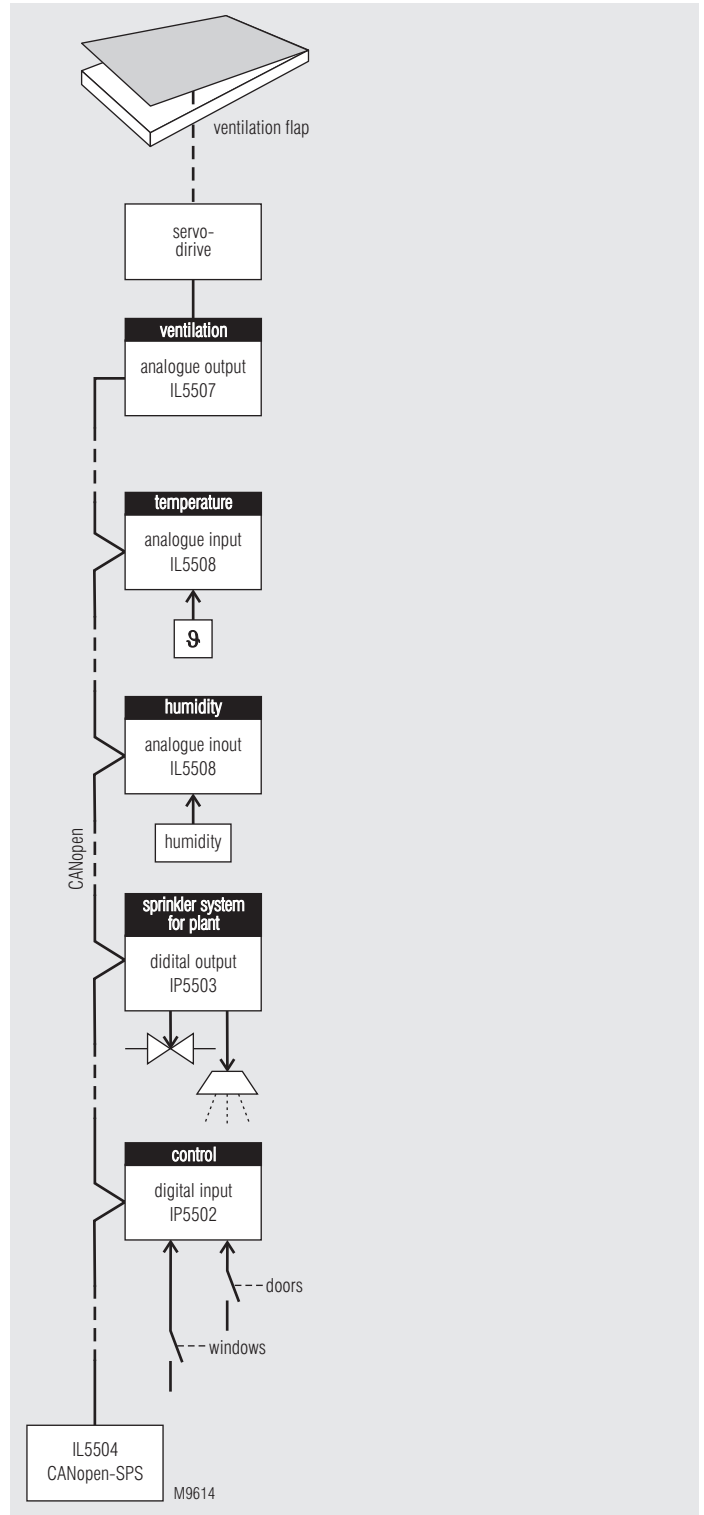
CAN-signals

CAN-H:	CAN_H bus line (dominant high)
CAN-L:	CAN_L bus line (dominant high)
R _{AB} :	Termination resistor 120 Ω
CAN-GND:	Reference potential of CAN-transceiver

Notes for wiring

- Mixed networks, or networks that are not galvanically separated
 - CAN-GND is connected between all devices (CIA DRP 303-1).
 - If no 3rd wire is available in the bus cable, the screen of the cable can be used. In this case the screen has to be connected to PE at one point.
- Galvanic separated networks
 - If the networks are completely separated CAN-GND must not be wired (CIA DRP 303-1).
 - The screen is connected to PE.
- An equalisation of potentials between units in far distance has to be provided.
- The CAN-bus must be terminated at the first and last device on the bus with a 120 Ω resistor, e.g. insert a link on terminals R_{AB} and CAN-H.

Application Example



M9614

CANopen-application for greenhouses:
Dependent on temperature- and humidity ventilation flap applications and
sprinkler systems for plants in a greenhouse.