Greater project flexibility

The OPEN IO modules, with a modular design and powerful communication properties, are ideally suited for all controller applications for technical building automation. They are compact, easy to install and can be universally implemented with various measuring elements. A total of 15 variants of the OPEN IO module are available. Whether as analog or digital module, IO combination module or pure input and output module – you will find the right module for your specific project! WSCAD macros and E-Plan macros offer additional support for your specific project.
The DEOS IO modules are connected to the OPEN EMS controller via the extremely durable and stable CAN-bus (Controller Area Network) – the most common bus system for networking control units. Per line, this bus system can accommodate up to 99 DEOS IO modules, this ensures high flexibility for subsequent extensions. The bus speed depends on the distance of the IO modules to the controller and can be as high as 1 Mbit/s, depending on bus quality.

Compact design

- Machine profile (45 mm) with 3 width units (WU)
- Suitable for installation in distribution cabinets, sub-distributions
- Mounting on standard 35 mm DIN rail

Practice oriented

- Removable spring-type terminals
- Reverse polarity protected connection of the power supply and of the CAN-bus via bridge bus connector
- Fast and easy addressing via address switch
- LEDs for display of operating status and bus status

Application possibilities

- Thanks to CAN-bus up to 5 km distributed transmission can be implemented
- Suitable for installation in switch cabinets, in sub-distributions, in the intermediate ceiling or in the raised floor

Wide variety

- 17 different variants, e.g.
  - with and without manual control level
  - for connection of NTC sensors
  - with integrated relays

MADE IN GERMANY

IO modules

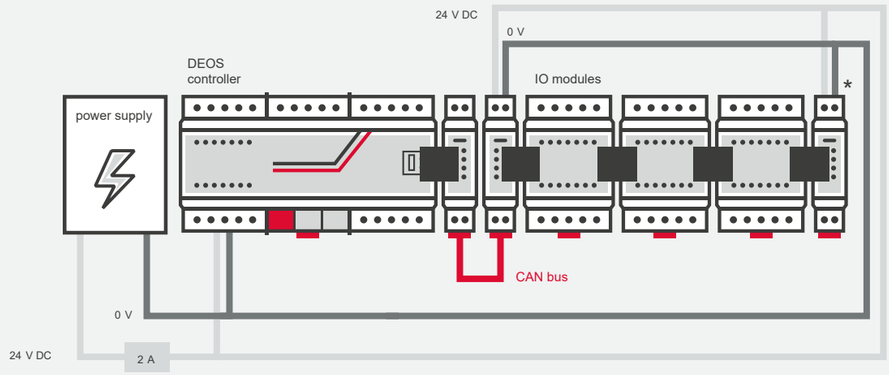
Do you have questions or do you need support? Our Sales Partners would be pleased to help you.

info@deos-ag.com
+49 5971 91133-0

Networking example of OPEN IO modules

When one of the IO modules is removed, the power supply of all remaining modules remains intact

Using 2 PKM modules at the beginning of the line facilitates set-up of additional CAN IO lines



Schematic representation

* The DEOS IO modules technically permit two-stream infeed of the 24 V DC, as long as the same power supply unit is used.
** The electronic fuse

OPEN IO modules designed for detecting signals / input values of the field level (sensors) and for controlling technical building equipment via output values

DS-C-x w/o manual control level

DS-C-x w/ manual control level

Highlights at a glance

- ✓ Compact design – only 3 device widths
- ✓ Suitable for installation in distribution cabinets and sub-distributions
- ✓ Fast configuration of the IO modules via the OPEN EMS controller
- ✓ Error-free connection of the IO modules via bridge bus connectors
- ✓ Easy set up of an additional line – modules in the switch cabinet can be deployed remotely via a PKM module
- ✓ IO modules with a manual control level (button) – manual control reset is possible via software
- ✓ LEDs for display of operating status and bus status
- ✓ Extensive libraries, incl. graphics for efficient engineering

Variants with digital IOs

- Digital inputs: Signal inputs/numeric inputs, 24 V DC, each opto-decoupled with display LED
- Digital outputs:
  - Transistor outputs: 24 V DC, load capacity to max. 80 mA per output
  - Relay outputs: For use category AC1 can be loaded to max. 3 A, see data sheet for additional use categories

Variants with analog IOs

- Analog inputs:
  - For LM-enabled IO modules: Sensor types Pt1000, Ni1000 [1], 10 mV/K, 0-10V, 0(4)-20 mA [2] as well as potentiometers
  - For NTC-enabled IO modules: Sensor types 0-10 V, 0(4)-20 mA [2], NTC [1], KTY [1] as well as potentiometers
- Analog outputs: 0-10 V DC, can be loaded to max. 8 mA per output

Variants with manual control level

- 1x button per analog output for changing between 2 operating modes (MANUAL, automatic) and for adjusting the output values ± 10% (± 1 V)
- 1x button per digital output (except DS-DO8R/S) for changing between 3 operating modes (manual ON, manual OFF, and automatic)
- 1x switch (only DS-DO8R/S) per digital output for changing between 3 operating modes (manual ON, manual OFF, and automatic)
- Fulfill the functions for local override

Hardware equipment & technical data [3]	Digital IO modules DS-C-x						
	DI16	DI8DO8T	DO8T	DO8TH	DO8R	DO8RH	DO8R/S
CAN-bus	1x CAN 2.0B, connection via bridge bus connector [4]						
Transmission rate	0 kbit/s … 250 kbit/s						
Digital inputs (DI)	16	8	–	–	–	–	–
Digital outputs (DO)	–	8 (transistor)	8 (transistor)	8 (transistor)	8 (relay)	8 (relay)	8 (relay)
Manual control level	–	–	–	8 (button)	–	8 (button)	8 (switch)
Assembly	on standard mounting rail 35 mm						
Dimensions (WxDxH)	54 mm x 60 mm x 90 (98) mm						
Material	Plastic						
Protection standard	IP 20						
Cooling	no fan; by convection						
Ambient temperature	0 … 50°C						
Ambient humidity	5 … 90% without condensation						
Installation position	Freely selectable						
Input voltage	24 V DC (19 … 30 V DC)						
Input current	50 mA	50 mA	50 mA	50 mA	100 mA	100 mA	100 mA
Power consumption	1.2 W	1.2 W	1.2 W	1.2 W	2.5 W	2.5 W	2.5 W
Total power loss	1.2 W	3.5 W	3.5 W	3.5 W	2.5 W	2.5 W	2.5 W
max. back-up fuse	2 A						
Connection	Pull-off spring-loaded terminals						

– Cannot be expanded

1 Various measuring elements
2 At 0(4)-20 mA: External load resistor 500 ohm required (not available from DEOS AG)
3 Additional product information is provided in the data sheet (see DEOS Portal at portal.deos-ag.com/...)
4 Up to 15 consecutive modules can be connected via the bridge bus connector. Furthermore, another external power supply must be fed in.

IO modules		Type	Art. no.
With 16 DI	Without manual control level	DS-C-DI16	DS-390036
With 8 DI, 8 DO	Without manual control level	DS-C-DI8DO8T	DS-390035
With 8 DO (transistor)	Without manual control level	DS-C-DO8T	DS-390041
	With manual control level (button)	DS-C-DO8TH	DS-390042
With 8 DO (relays)	Without manual control level	DS-C-DO8R	DS-390038
	With manual control level (button)	DS-C-DO8RH	DS-390039
	With manual control level (switch)	DS-C-DO8RH/S	DS-390040

IO modules		NTC-enabled	Type	Art. no.
With 8 AI	Without manual control level	–	DS-C-AI8	DS-390037
	With manual control level (button)	■	DS-C-AI8/N	DS-390053
With 8 AI, 4 AO	Without manual control level	–	DS-C-AI8AO4	DS-390045
		■	DS-C-AI8AO4/N	DS-390054
	With manual control level (button)	–	DS-C-AI8AO4H	DS-390046
		■	DS-C-AI8AO4H/N	DS-390055
With 4 AO	Without manual control level	–	DS-C-AO4	DS-390043
	with manual control level	–	DS-C-AO4H	DS-390044

■ NTC-enabled
– Not NTC-enabled

Hardware equipment & technical data [1]	Analog IO modules DS-C-x							
	AI8	AI8/N	AI8AO4	AI8AO4/N	AI8AO4H	AI8AO4H/N	AO4	AO4H
CAN-bus	1x CAN 2.0B, connection via bridge bus connector [2]							
Transmission rate	0 kbit/s … 250 kbit/s							
Analog inputs	8 (LM)	8 (NTC)	8 (LM)	8 (NTC)	8 (LM)	8 (NTC)	–	–
Analog outputs	–	–	4	4	4	4	4	4
Manual control level	–	–	–	–	4 (button)	4 (button)	–	4 (button)
Assembly	on standard mounting rail 35 mm							
Dimensions (WxDxH)	54 mm x 60 mm x 90 (98) mm							
Material	Plastic							
Protection standard	IP 20							
Cooling	no fan; by convection							
Ambient temperature	0 … 50°C							
Ambient humidity	5 … 90% without condensation							
Installation position	Freely selectable							
Input voltage	24 V DC (19 … 30 V DC)							
Input current	70 mA	70 mA	110 mA	110 mA	110 mA	110 mA	110 mA	110 mA
Power consumption	1.7 W	1.7 W	2.3 W	2.3 W	2.3 W	2.3 W	2.3 W	2.3 W
Total power loss	1.7 W	1.7 W	2.3 W	2.3 W	2.3 W	2.3 W	2.3 W	2.3 W
max. back-up fuse	2 A							
Connection	Pull-off spring-loaded terminals							

– Cannot be expanded

1 Additional product information is provided in the data sheet (see DEOS Portal at portal.deos-ag.com/...)
2 Up to 15 consecutive modules can be connected via the bridge bus connector. Furthermore, another external power supply must be fed in.

IO modules with 7 integrated IOs and an integrated temperature sensor

DS-IO7 *DS-IO7-B*

Highlights at a glance

- ✓ Compact design
- ✓ Suitable for installation in a standard switch box
- ✓ Configuration of UIs via simple jumper settings
- ✓ Efficient configuration and commissioning – set the address and parameterize via finished modules
- ✓ Integrated temperature sensor
- ✓ LED, button, and potentiometer for free use (e.g. LED for display of operating states)
- ✓ Electronic switch contacts ensure noiseless switching of actuators

Variant without manual operation

- Designed for distribution of IOs in rooms, distributor cabinets and sub-distributions
- Additional hardware equipment for integration in the control program
  - Integrated temperature sensor as virtual AI

Variant with manual operation

- Designed for distribution of IOs in rooms, distributor cabinets and sub-distributions
- Additional hardware equipment for integration in the control program
  - Integrated temperature sensor as virtual AI
  - Button as virtual DI
  - Potentiometer as virtual AI
  - LED as virtual DO

Hardware equipment & technical data [1]	DS-x IO7	DS-x IO7-B
CAN-bus	1x CAN 2.0B	
Transmission rate	50 kBit/s	
Temperature sensor integrated	■ [2]	■ [2]
Temperature range	0 … 50°C	
LED	–	■ [2]
Manual control level		
Button	–	1x [2]
Potentiometer	–	■ [2]
Universal outputs	2x selectable via jumper: 2 … 10 V, 24 V or 24 V PWM	
Digital inputs	3x 24 V AC/DC	
Analog inputs	1x temperature sensor 10 mV/K (0 … 50 °C)	
Analog outputs	1x 0 … 10 V DC	

Hardware equipment & technical data [1]	DS-x IO7	DS-x IO7-B
Assembly	Surface mounting, wall mounting, or in a deep installation box	
Dimensions (WxDxH)	84 mm x 28 mm x 84 mm	
Material	Plastic	
Protection standard	IP 20	
Cooling	no fan; by convection	
Ambient temperature	0 … 50°C	
Ambient humidity	5 … 90% without condensation	
Input voltage	24 V AC/DC	
Input current	approx. 50 mA [3]	
Power consumption	1.2 W	
max. back-up fuse	2 A	
Connection	Screw-type terminals	

■ Standard
– Cannot be expanded

Multi-IO modules		Type	Art. no.
With internal control	Without manual operation	DS-IO7	DS-390013
	With manual operation	DS-IO7-B	DS-390012

1 Additional product information is provided in the data sheet (see DEOS Portal at portal.deos-ag.com/...)
2 After connection to the controller, the LED as DO, the button as DI, the potentiometer as AI, and the internal sensor as AI can be incorporated in the programming.
3 Plus current consumption of the connected consumers
4 Quantity-dependent special prices on request

Coupler module for infeed of the supply voltage and the CAN-bus in IO modules

DS-PKM

Coupler module DS-PKM

- Coupler module for infeed of the supply voltage and the CAN-bus in IO modules [1] at the start of the CAN-bus
- For tapping the supply voltage and the CAN-bus at the end of the CAN-bus to open a new row of modules
- End of line resistor can be switched on/off via switch
- Connection to IO modules via bridge bus connector

Hardware equipment & technical data [2]	DS-PKM
CAN-bus	1x CAN 2.0B
Assembly	on standard mounting rail 35 mm
Dimensions (WxDxH)	17.5 mm x 60 mm x 90 (98) mm
Material	Plastic
Protection standard	IP 20
Cooling	no fan; by convection
Ambient temperature	0 … 50°C
Ambient humidity	5 … 90% without condensation
Installation position	Freely selectable
End of line resistor	120 Ω
Input voltage	24 V DC (19 … 30 V DC)
Input current	1.65 A at max. 15 IO modules
Power loss	0.15 W with a max. of 15 IO modules
max. back-up fuse	2 A
Connection	Pull-off spring-loaded terminals

IO modules – accessories	PU	Type	Art. no.
Coupler module	1x	DS-PKM	DS-390024
	2x	DS-PKM -2x-	DS-390022

Measured value transducer for connecting resistance sensors with large measuring ranges

DS-MT-R

Measurement transducer DS-MT-R

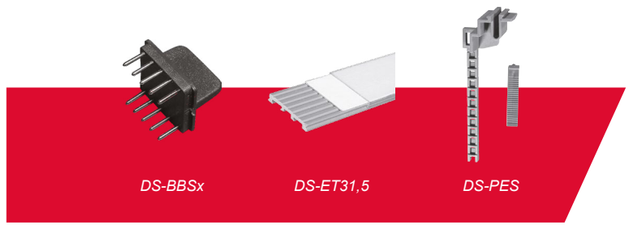
- For adaptation of the analog signals of the IO module type DS-AI8 (not DS-AI8/N)
- Can be wired with either PTC or NTC sensors

Hardware equipment & technical data [2]	DS-MT-R
Signal converter	8x (AI → AO)
Analog inputs	Resistance sensors 200 ohm … 1 mohm
Analog outputs	Resistance values 300 ohm … 30 kohm
Assembly	on standard mounting rail 35 mm
Dimensions (WxDxH)	54 mm x 60 mm x 90 (98) mm
Material	Plastic
Protection standard	IP 20
Cooling	no fan; by convection
Ambient temperature	0 … 50°C
Ambient humidity	5 … 90% without condensation
Installation position	Freely selectable
Connection	Pull-off spring-loaded terminals

IO modules – accessories	Type	Art. no.
Measurement transducer	DS-MT-R	DS-390047

1 Up to 15 consecutive modules can be connected via the bridge bus connector. Furthermore, another external power supply must be fed in.
2 Additional product information is provided in the data sheet (see DEOS Portal at portal.deos-ag.com/...)

Accessories – power supply and more

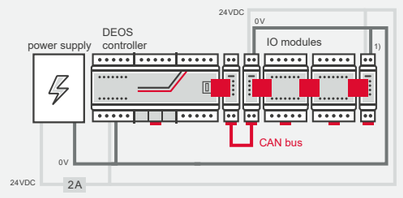


Bridge bus connector
- For connection of power supply and CAN-bus
- Packing units 10 pieces or 100 pieces

Label carriers – labelling of the IO modules
- For labelling the IO modules with Zweckform labels no. 3657 or no. 4780
- For bonding on mounting base DS-PES

Mounting base
- For label carrier DS-ET315
- For mounting on wiring ducts
- Packing unit 25 pieces

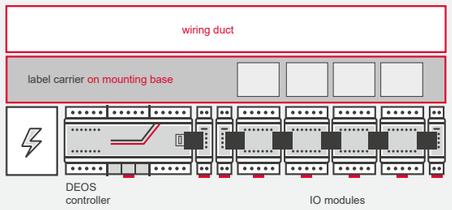
Networking via bridge bus connector [1)]



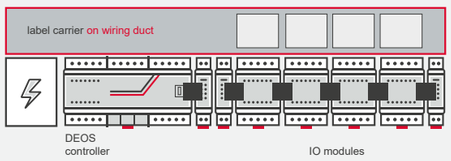
Technical data	DS-ET315
Assembly	either with mounting base DS-PES with adhesive tape
Dimensions (LxDxH)	1000 mm x 5.6 mm x 31.5 mm
max. label width	29 mm
Material	Plastic
Base	hard PVC, gray (RAL 7030)
Cover	hard PVC, transparent

Mounting examples

Mounting with
- Label carrier DE-ET315
- Mounting base DS-PES



Mounting with
- Label carrier DE-ET315
- Adhesive tape



Schematic representation

IO modules – accessories		Type	Art. no.
Bridge bus connector	PU 10 pieces	DS-BBS 10	DS-390019
	PU 100 pieces	DS-BBS 100	DS-390020
Label carrier	Price per running meter	DS-ET315	DS-350045
Mounting base	For DS-ET315, PU 25 pieces	DS-PES	DS-350046

1 The DEOS IO modules technically permit two-stream infeed of the 24 V DC, as long as the same power supply unit is used.

EPLAN macros

Do you use EPLAN to create your circuit diagrams?
We make your work easier and provide you with free EPLAN macros for our OPEN EMS and OPEN IO modules.
The macros reflect our many years of experience in plant engineering and our know-how in building management systems.
The following macros are available for use from EPLAN Electric P8 (software version 1.9) in the DEOS Portal:

OPEN EMS Controller
OPEN 4100 EMS
OPEN 3100 EMS
OPEN 810 EMS
OPEN 710 EMS
OPEN 600H/5 EMS
OPEN 600H/0 EMS
OPEN 600/5 EMS
OPEN 600/0 EMS
OPEN 600 EMS basic24
OPEN 500H/5 EMS
OPEN 500H/0 EMS
OPEN 500/5 EMS
OPEN 500/0 EMS

OPEN IO modules
C-DI16
C-DI8DO8T
C-DO8T
C-DO8TH
C-DO8R
C-DO8RH
C-DO8RH/S
C-AI8
C-AI8AO4
C-AI8AO4H
C-AO4
C-AO4H

DEOS item library for WSCAD

In cooperation with WSCAD, we provide our product data for the OPEN EMS platform, including the corresponding electrical data.
You can find our extensive product symbols at www.wscaduniverse.com in the data library for WSCAD and EPLAN users.
Further benefits from WSCAD/DEOS are shown in the programming of the DEOS automation stations (OPEN EMS) by means of the WSCAD export function of the I/O lists.
These can be added to the DEOS programming tool OPEN XL via the data import function. Thus, the inputs and outputs are automatically created and assigned without media disruption.

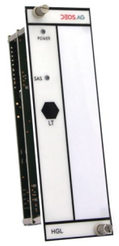
Note:
The planning you create can also be exported in formats of external ECAD systems for documentation purposes.

Collective fault signaling modules designed as local override devices (LORs) for installation in switch cabinets of technical building equipment

Highlights at a glance

- ✓ Suitable as start module / head module for central display of fault messages
- ✓ Indication of faults via acoustic signal of an internally connected or externally connected horn
- ✓ Acknowledge faults via either an internal or an external button
- ✓ Output module for executing a lamp test of all connected modules
- ✓ Labelling via paper inserts (DS-LVB-B1)

Variants for display and forwarding (potential-free) of incoming collective fault signals



DS-HGL

DS-HGLN

Display and control elements [1]	DS-HGx L	DS-HGx LN
Button		
Test lamp	■	■
Acknowledge fault	–	■
Acknowledge horn	–	■
LEDs		
Power supply	■	■
Collective fault signals (static)	■	■
Collective fault signals (new value)	–	■
Free pin-assignment, 2x	–	■
Internal horn	–	■
External connections		
Horn	–	■
Acknowledge fault button	–	■
Lamp test test line	■	■
Labelling plate tab	■	■

■ Present
– Not available

Technical data [1]	DS-HGx L	DS-HGx LN
Relay outputs		
External horn	–	1x
Acknowledge fault	–	1x
Collective fault signals (static)	1x NC, 1x NO	1x NC, 1x NO
Digital inputs		
Free LED assignment	–	2x
Acknowledge fault button	–	1x
Assembly	On device carriers for installation in 19" switch cabinet elements or switch cabinet doors	
Dimensions (WxDxH)	40.3 mm x 60.6 mm x 129 mm	
Protection standard	IP 40	
Ambient temperature	0 … 50°C	
Ambient humidity	5 … 95% without condensation	
Installation position	Vertical	
Input voltage module	24 V DC ± 10%	
Input current	40 mA	200 mA
Power loss	0.96 W	4.80 W
max. back-up fuse	2 A	
Connection	Pull-off screw-type terminals	

Collective fault modules		Type	Art. no.
With relay <230 V	Static	DS-HGL	DS-531001
	New value	DS-HGLN	DS-531002

1 Additional product information is provided in the data sheet (see DEOS Portal at portal.deos-ag.com/...)

Signaling module designed as a local override device (LORs) for installation in switch cabinets of technical building equipment

Highlights at a glance

- ✓ Ideal for centrally displaying and comparing multiple fault signals or operating signals
- ✓ Labelling via paper inserts (DS-LVB-B1)

Variants for visual signaling of fault signals, operating signals, and/or warning signals

DS-HM599A

DS-HM599B

DS-HM699A

DS-HM699B

Display and control elements [1]	DS-HMx 599A	599B	699A	699B
LED f. power supply	■	■	■	■
Signal line, each with	5	5	10	10
LEDs for fault signals, operating signals, or warning signals	■	■	■	■
Forwarding to collective fault signaling module (static and/or new value)	■	■	■	■
Open-circuit principle (OCP) or closed-circuit principle (CCP)	–	■	–	■
Lamp test test line	■	■	■	■
Labelling plate tab	■	■	■	■

■ Present
– Not available

Technical data [1]	DS-HMx 599A	599B	699A	699B
Digital output				
Collective fault signals (static)	1x	1x	2x	2x
Digital inputs				
LED signal line	5x	5x	10x	10x
Assembly	On device carriers for installation in 19" switch cabinet elements or switch cabinet doors			
Dimensions (WxDxH)	40.3 mm x 60.6 mm x 129 mm			
Protection standard	IP 40			
Ambient temperature	0 … 50°C			
Ambient humidity	5 … 95% without condensation			
Installation position	Vertical			
Input voltage module	24 V DC ± 10%			
Input current	30 mA	60 mA	50 mA	110 mA
Power loss	0.72 W	1.44 W	0.96 W	1.20 W
max. back-up fuse	2 A			
Connection	Pull-off screw-type terminals			

Signaling modules		Type	Art. no.
5 signaling lines	Open-circuit principle	DS-HM599A	DS-531003
	Open-circuit principle or closed-circuit principle	DS-HM599B	DS-531033
10 signaling lines	Open-circuit principle	DS-HM699A	DS-531004
	Open-circuit principle or closed-circuit principle	DS-HM699B	DS-531034

1 Additional product information is provided in the data sheet (see DEOS Portal at portal.deos-ag.com/...)