CIO 208

4921240525E

CAN bus-based I/O module

Data sheet

Improve Tomorrow

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1. Product description

1.1 Application

The CIO series is a range of external I/O modules for some DEIF controllers. These are used when the demand for inputs and outputs exceeds the capacity of the controller.

The CIO 208 supports:

- 8 relay outputs
- 240 V AC or 30 V DC relay contacts
- 8 A relay rating
- CAN bus interface
- LEDs to indicate status and output state
- 12/24 V DC supply

1.1.1 Host controllers

The CIO modules need a host controller to send and receive their information. The controllers that are listed below support CIO modules:

Type	SW version	CIO 116 quantity	CIO 208 quantity	CIO 308 quantity
AGC-4 Mk II	From 6.08*	5	5	5
AGC-4	From 4.59	3	3	3
AGC 150	From 1.00	3	3	3
ASC 150	From 1.15	3	3	3
AGC 200	From 4.59	3	3	3

NOTE For software versions 6.00 to 6.07, the AGC-4 Mk II can have three of each type of CIO module.

1.2 Common functions

Status output

The status output is active when the CIO module works correctly and communication to the host controller is established. The microprocessor is supervised by a watchdog.

NOTE The status output can be re-configured as a configurable output.

Status LED

The status LED (LED1) indicates the operation status of the module and the status output.

CAN LED

The CAN LED (LED2) indicates the status of the CAN bus communication to the host controller.

CAN bus end resistor

The CIO module has a built-in 120 ohm end-termination for the CAN bus line, which can be activated via the switch (S1).

Output LEDs

All 8 outputs have a green LED to indicate the state of the relay. The LED is visible through the inspection window on the front of the CIO module.

ID selector

The ID selector is used to give CIO modules of the same type different IDs. All three types of CIO modules can use IDs from 1 to 15, and different module types may use the same ID.

USB connection

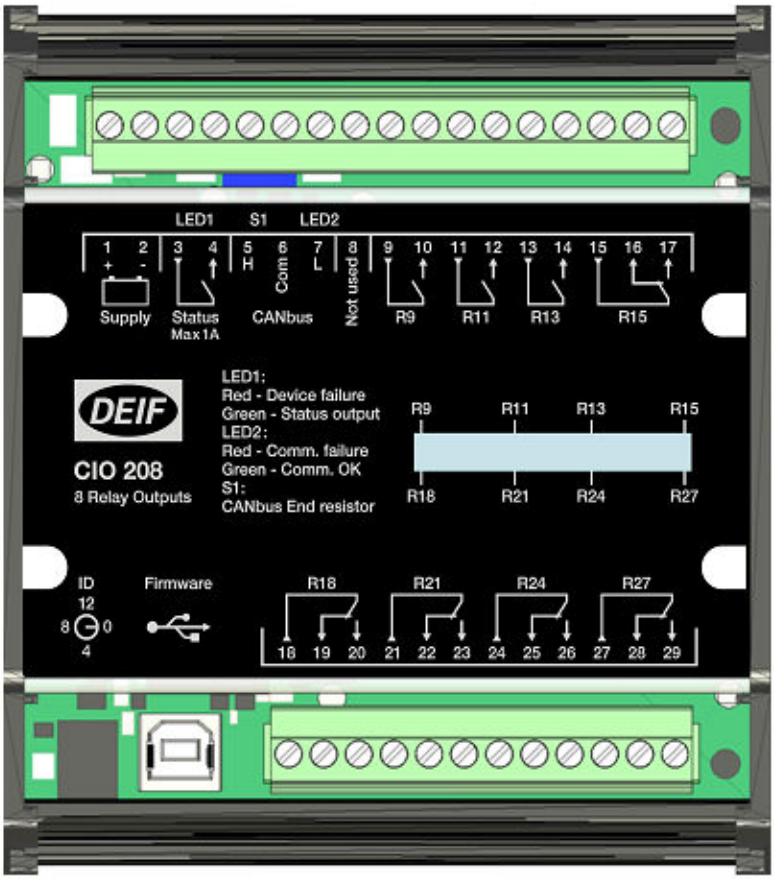
The USB port can only be used to update the firmware of the module. Configuration is not possible via this port.

NOTE To update the firmware, the CIO module ID switch must be set to ID 0.

CAN bus

The CAN bus interface is intended for DEIF host controllers only. It is possible to have additional CAN bus communication devices (J1939) on the same CAN bus line, but they cannot act as host for the CIO module. It is described in the manual of the host controller if it supports this feature.

2. CIO 208 hardware



Terminal	Name	Description	Comment	
1	+	+12/24 V DC	Power supply	
2	-	0 V DC		
3	Status	Common	Status output (configurable)	
4		Normally open		
5	H	CAN H	CAN bus interface	
6	Com	CAN Com		
7	L	CAN L		
8	Not used			
9	R9	Common	Relay 9	Relay group 1
10		Normally open		
11	R11	Common	Relay 11	
12		Normally open		
13	R13	Common	Relay 13	
14		Normally open		
15	R15	Common	Relay 15	
16		Normally closed		
17		Normally open		

Terminal	Name	Description	Comment	
18	R18	Common	Relay 18	Relay group 2
19		Normally closed		
20		Normally open		
21	R21	Common	Relay 21	
22		Normally closed		
23		Normally open		
24	R24	Common	Relay 24	
25		Normally closed		
26		Normally open		
27	R27	Common	Relay 27	
28		Normally closed		
29		Normally open		

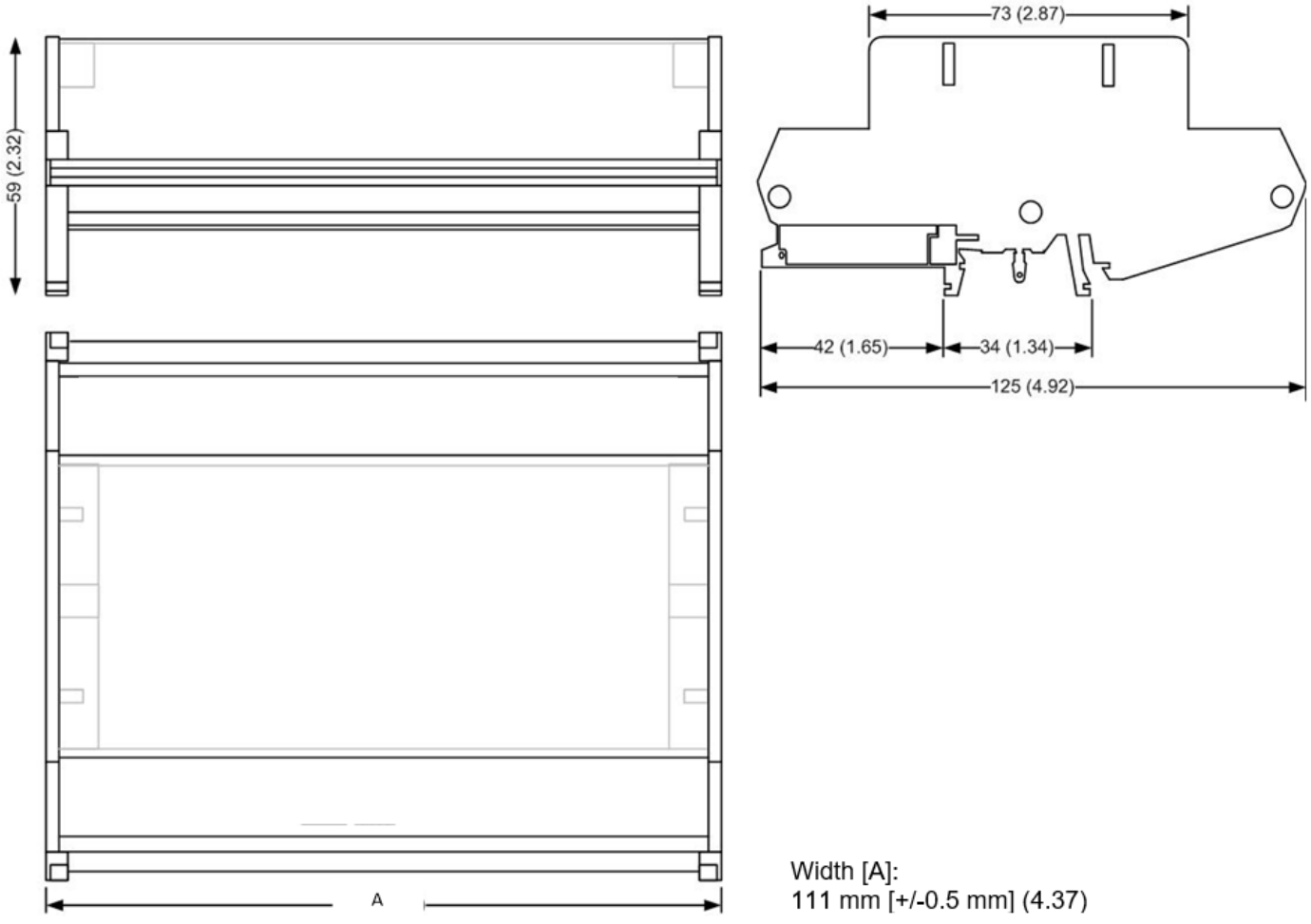
3. Technical specifications

Category	Specifications
Operating temperature	-40 to +70 °C (-40 to 158 °F) to IEC 60068-2-1/2 **UL/cUL Listed:** Max. surrounding air temperature 55 °C (131 °F)
Storage temperature	-40 to +70 °C (-40 to +158 °F)
Climate	97 % RH to IEC 60068-2-30
Operating altitude	Max. 4000 meters above sea-level Derated relay voltage above 2000 meters (see relay output specification)
Aux. supply	Nominal 12/24 V DC (operational 6.0 to 36 V DC) Able to survive 0 V DC for minimum 50 ms when coming from at least 12 V DC with 4 relays active (cranking dropout) Able to survive 0 V DC for minimum 30 ms when coming from at least 12 V DC with 8 relays active (cranking dropout) The aux. supply input is to be protected by a 2 A slow-blow fuse If protection against load dump is required, use a 12 A slow-blow fuse **UL/cUL Listed:** 10 to 32.5 V DC
Consumption	Min. 0.7 W Max. 3.2 W
Load dump	ISO 16750-2 Test A (24 V DC system) SAE J1113-11 Pulse 5 A Power supply ports: Test 1 – 123 V at 1 Ω for 100 ms Test 2 – 174 V at 8 Ω for 350 ms
Status output	Solid state output Maximum 30 V AC or DC Temperature from -40 to +40 ºC max. 1 A resistive load Temperature from +40 to +70 ºC max. 0.8 A resistive load
Relay outputs	Electrical rating: 8 A resistive, B300 Pilot Duty If all relay outputs are continuously ON: • Max. 4 A at 55 ºC surrounding air • Max. 2 A at 70 ºC surrounding air • 0-2000 meters 250 V AC/30 V DC • 2000-4000 meters 150 V AC/30 V DC CAUTION: Relays with working voltages >150 V AC must be operated within the same relay group and not next to relays with 30 V DC working voltage **UL/cUL Listed:** 250 V AC/30 V DC, 4 A resistive load 250 V AC/30 V DC, 4 A pilot duty

Category	Specifications
Galvanic separation	Between relays within one group: 2200 V 50 Hz for 1 minute Between relay group and other I/Os: 3250 V 50 Hz for 1 minute Between CAN bus interface and other I/Os: 600 V 50 Hz for 1 minute Between status relay output and other I/Os: 600 V 50 Hz for 1 minute
Mounting	DIN rail mounting inside a cabinet or other enclosure Compatible DIN rails: • TS35/top hat 35 mm (this rail type is used in all product tests) According to EN 50022 • G-type rail According to EN 50035, BS 5825, DIN 46277-1 **UL/cUL Listed:**To be installed in accordance with the NEC (US) or the CEC (Canada)
Connections	Minimum 0.2 mm2 (24 AWG) multi-stranded Maximum 2.5 mm2 (12 AWG) multi-stranded Firmware port: USB-B **UL/cUL Listed:** Use min. 90 °C copper conductors only
Terminals tightening torque	Minimum 0.5 Nm (4.4 lb-in) Maximum 0.6 Nm (5.3 lb-in) **UL/cUL Listed:** 0.5 Nm (4.4 lb-in)
Approvals	CE UL/cUL Listed to UL508 and CSA C.22.2 No. 142-M1987 UL/cUL Recognized to UL6200 and CSA C.22.2 No. 14-13 (pending)
Weight	320 g (0.71 lbs)
Safety	IEC/EN 60255-27, CAT III, 300 V, pollution degree 2
Protection	IP20 - IEC/EN 60529 NEMA type 1 **UL/cUL Listed:** Type complete device, Open Type 1
EMC/CE	EN 61000-6-1/2/3/4 IEC/EN 60255-26 IEC 60533 power distr. zone IACS UR E10 power distr. zone
Vibration	Test performed with CIO module mounted on top hat 35 mm DIN rail 3 to 13.2 Hz: 2 mmpp 13.2 to 100 Hz: 0.7 g To IEC 60068-2-6 To IACS UR E10 10 to 58.1 Hz: 0.15 mmpp 58.1 to 150 Hz: 1 g To IEC 60255-21-1 Response (class 2) 10 to 150 Hz: 2 g To IEC 60255-21-1 Endurance (class 2) 3 to 8.15 Hz: 15 mmpp 8.15 to 35 Hz: 2 g

Category	Specifications
	To IEC 60255-21-3 Seismic (class 2)
Shock	Test performed with CIO module mounted on top hat 35 mm DIN rail 10 g, 11 msec, half sine To IEC 60255-21-2 Response test (class 2) 30 g, 11 msec, half sine To IEC 60255-21-2 Withstand test (class 2) 50 g, 11 msec, half sine To IEC 60068-2-27
Bump	Test performed with CIO module mounted on top hat 35 mm DIN rail 20 g, 16 msec, half sine To IEC 60255-21-2 (class 2)
Material	All plastic materials are self-extinguishing according to UL94 (V1)

3.1 Unit dimensions in mm (inches)



4. Ordering

4.1 Available variants

Type	Variant no.	Description	Item no.	Note
CIO 208	01	CIO 208 - 8 relay outputs	2912890250	8 × relay outputs

4.2 Order specifications

Variants

Mandatory information		
Item no.	**Type**	**Variant no.**

Example

Mandatory information		
Item no.	**Type**	**Variant no.**
2912890250-01	CIO 208	01

4.3 Legal information and disclaimer

DEIF takes no responsibility for installation or operation of the generator set. If there is any doubt about how to install or operate the engine/generator etc. controlled by the specific extension, the company responsible for the installation or the operation of the extension must be contacted.

NOTE The CIO module is not to be opened by unauthorised personnel. If opened anyway, the warranty will be lost.

Disclaimer

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