C-DIAS Analogue Output Module CAO 081

for eight ±10V DC outputs

This analogue output module is used for driving components capable of being analogue driven (e.g. proportional pressure valves, frequency converters, etc.).

Technical Data

Analogue channel specifications

Number of channels	8
Output voltage	-10 to +10V DC
Output value	-2000 to +2000
Resolution	12 bit (5mV / bit)
Loading capacity of the output voltage	>5KΩ
Protection against short circuiting	Yes
Transient time	<500µs
Analogue precision	±0.3% of the output size

Electrical requirements

Supply of the C-DIAS bus	+5V	
Current drawn at the C-DIAS bus (+5V supply)	Typically 12mA	Maximum 20mA
Current drawn at the C-DIAS bus (+24V supply)	Typically 60mA	Maximum 75mA

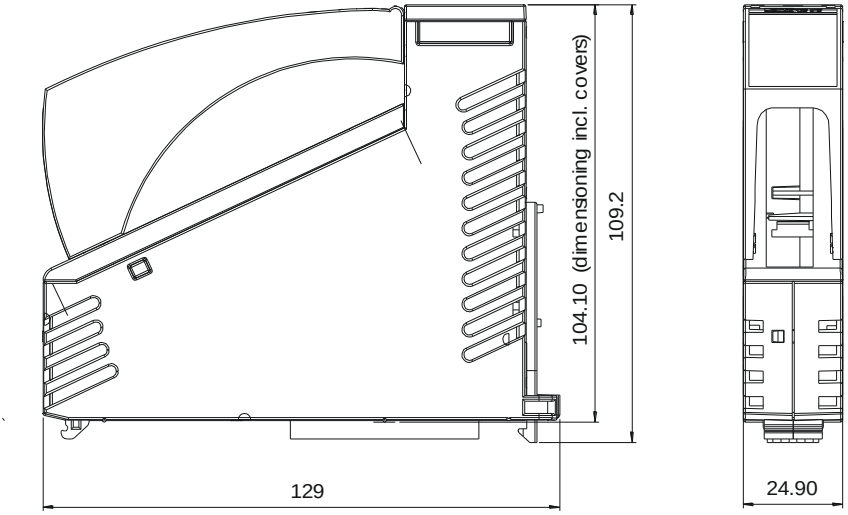
Miscellaneous

Article number	12-010-081
Hardware version	1.x
Standardization	UL (E247993)

Environmental conditions

Storage temperature	-20 – +85°C	
Operating temperature	0 – +60°C	
Humidity	0 – 95%, without condensation	
EMV stability	In accordance with EN 61000-6-2:2001 (industrial)	
Resistance to shocks	EN 60068-2-27	150m/s²
Protective system	EN 60529	IP 20

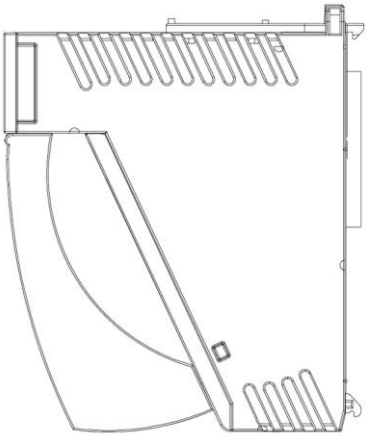
Mechanical dimensions



Mounting position

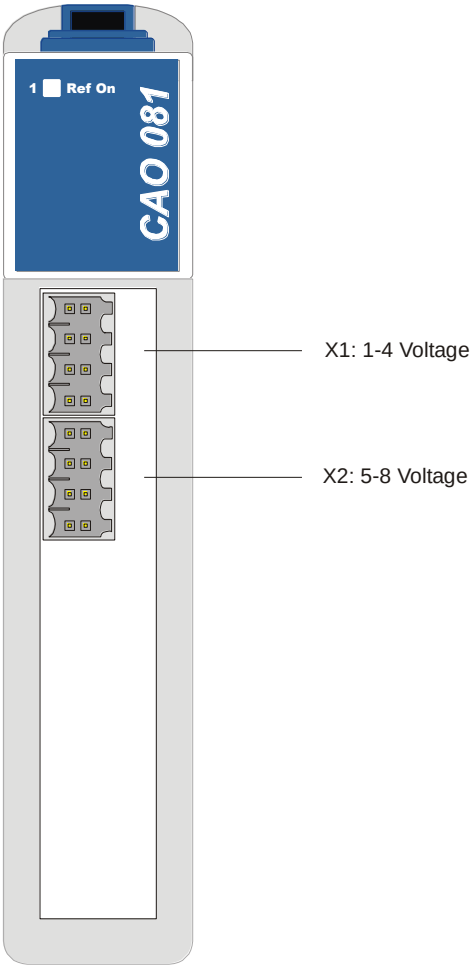
To ensure optimal cooling of the module, the CAO 081 must be mounted as shown (standing). For an angled mounting position, forced convection (cooling fan) must be used.

Top

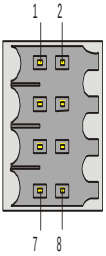


Bottom

Connections

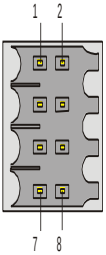


X1: 1-4 Voltage



Pin	Assignment
1	AGND
2	Analogue output 1 (±10V)
3	AGND
4	Analogue output 2 (±10V)
5	AGND
6	Analogue output 3 (±10V)
7	AGND
8	Analogue output 4 (±10V)

X2: 5-8 Voltage



Pin	Assignment
1	AGND
2	Analogue output 5 (±10V)
3	AGND
4	Analogue output 6 (±10V)
5	AGND
6	Analogue output 7 (±10V)
7	AGND
8	Analogue output 8 (±10V)

Usable connectors

X1, X2: 8-pol. Weidmüller plug B2L/B2CF 3,5/8

The complete C-DIAS plug set CKL 046 with spring clamp is available from Sigmatek with the article number 12-600-046.

Status display

LED No.	LED color	Meaning
1	green	Reference voltage on/out

Wiring instructions

In order to guarantee trouble free functioning it is essential to stick to a meticulous wiring arrangement:

- The 0V supply voltage connection must follow the shortest path to the common 0V terminal.
- The CMB – housing must be properly connected to earth.
- The connecting wires to the analogue components must be as short as possible and avoid lying in parallel to wires carrying digital signals.
- The signal carrying wires must be screened.
- The screening must be connected to a common screening rail.

Connection of the analogue outputs

Example of application: axis control for direct current servos, frequency converter

Addressing

The analogue module is not automatically read into the process map by the operating system.

Address	Access		Function
16#00,16#01	WRITE	WORD	Analogue output value channel 1 (low byte, high byte)
16#02,16#03	WRITE	WORD	Analogue output value channel 2 (low byte, high byte)
16#04,16#05	WRITE	WORD	Analogue output value channel 3 (low byte, high byte)
16#06,16#07	WRITE	WORD	Analogue output value channel 4 (low byte, high byte)
16#08,16#09	WRITE	WORD	Analogue output value channel 5 (low byte, high byte)
16#0A,16#0B	WRITE	WORD	Analogue output value channel 6 (low byte, high byte)
16#0C,16#0D	WRITE	WORD	Analogue output value channel 7 (low byte, high byte)
16#0E,16#0F	WRITE	WORD	Analogue output value channel 8 (low byte, high byte)
16#11	WRITE	BYTE	Bit 7: Switch on/off reference

Matching data
(24C02 is organized byte-wise)

Address	Data	Description
$00	$xx	Check sum
$01	123	Identification
$02	6	Module group 6 = CAO
$03	1	Module version = CAO081
$04	8	Number of channels
$05	$10	Hardware version $10 = HW 1.0
$06-$3F	$00	FILL
$10		Serial number
		Matching data in serial EEPROM
$40	$xxxx	Check sum
$42	12345	Identification
$44	10	Length of the following data block in WORD
$46	$0008	Number of channels
		AO matching data for voltage output: (-2000 / 0 / 2000 = -10V / 0V / +10V)
$48	2061	AO1 Offset
$4A	3800	AO1 Multiplier
$4C	3892	AO1 Divisor
$4E-$52		Matching data AO2
$54-$58		Matching data AO3
$5A-$5E		Matching data AO4
$60-$64		Matching data AO5
$66-$6A		Matching data AO6
$6C-$70		Matching data AO7
$72-$76		Matching data AO8
$78-$FF	$00	FILL