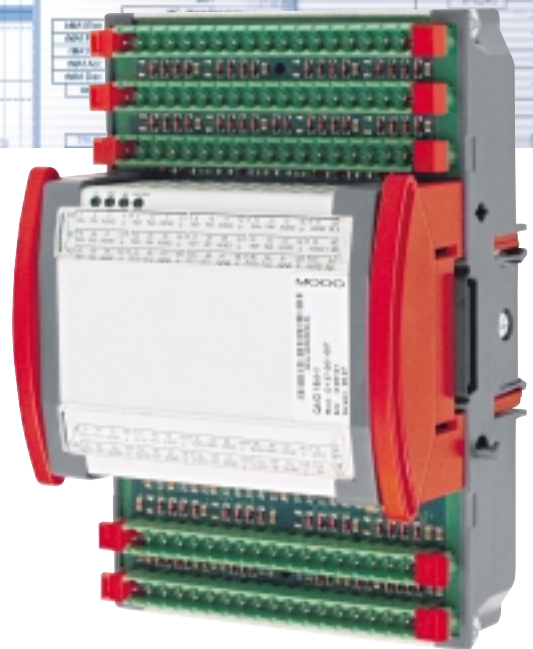


## M3000 Control System



**QAIO 16/4-V**  
**QAIO 16/4-A**  
**Analog I/O Extension Module**



## GENERAL

The QAIO 16/4 Analog Module is used for local extension of the inputs and outputs (I/O) of the Moog Servo Controller (MSC) control module.

The module is mounted on a DIN top-hat rail and directly connected to the MSC via the internal extension bus (E-bus).

## QAIO

Analog I/O extension module

- QAIO 16/4-V 16 voltage inputs  $\pm 10$  V; or QAIO 16/4-A 16 current inputs  $\pm 20$  mA
- 4 voltage outputs,  $\pm 10$  V
- 1 reference voltage output +10 V
- Connection via E-bus

## INPUTS/OUTPUTS

- 16 voltage or current inputs  
The input channels are converted in multiplex operation. The measurement range is  $\pm 10$  V (QAIO 16/4-V) or  $\pm 20$  mA (QAIO 16/4-A).
- 1 reference voltage output  
The reference voltage source provides a short circuit protected voltage of +10 V.
- 4 voltage outputs  
The output channels provide a voltage signal in the range of  $\pm 10$  V. The maximum output current is 5 mA (overload protection).

## CONFIGURATION

The configuration of the analog I/O is carried out per software via the central control configuration in the Moog Axis Control Software (MACS) development environment.

## ACTUATION

The I/O of the analog extension module is actuated directly from the MSC via the extension bus (E-bus).

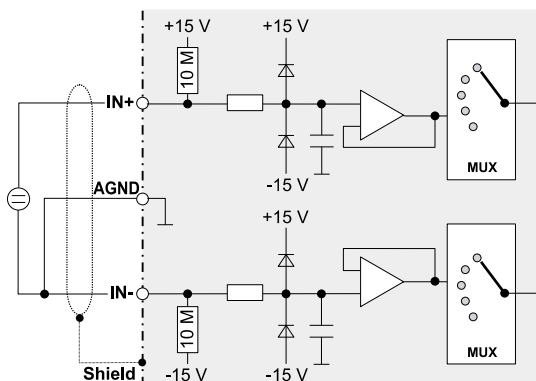
## MODULE STATUS LEDs

On the front, 4 LEDs provide information about the status of important module functions.

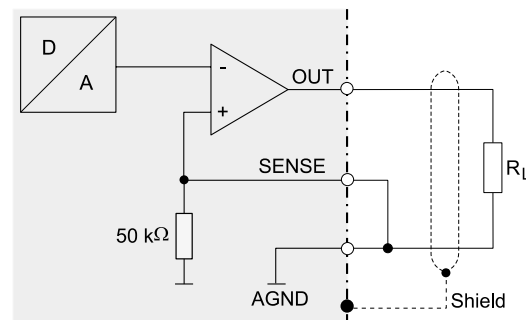
## E-BUS

One MSC can be extended with a maximum of 7 modules (e.g. QAIO or QDIO).

## BASIC CIRCUIT DIAGRAM, ANALOG INPUT



## BASIC CIRCUIT DIAGRAM, ANALOG OUTPUT



Module Data		Analog I/O extension module	
Order number		QAIO 16/4-V: D137-001-007; QAIO 16/4-A: D137-001-006	
Connection to M3000 modules		Via E bus (max. 6.6 MHz)	
Connection technique		Plug-in terminal strips for screwing or clamping	
Connection of the I/O		3-conductor front wiring	
Mounting		Mounting rail NS 35/7.5 according to EN 50022 (DIN-top hat rail)	
4 module status LEDs		Module functions and diagnosis	
Dimensions, WxHxD (mm)		124 x 170 x 85.5 (attachment dimension: W = 113 / 118.5)	
Temperature range		+5°C (+41°F) to +50°C (+122°F) (operation) and -25°C (-13°F) to +70°C (+158°F) (storage)	
Relative air humidity		10 % to 95 % (non-condensing)	

Standards	
Interference emission / immunity	EN 61000-6-4 / EN 61000-6-2, industrial portion
Protection class / protection system	III / IP20
Insulation strength	IEC 61131-2; test voltage 500 V DC

Energy Supply	
Voltage supply of module electronics	+24 V DC (18-32 V DC) SELV pursuant to IEC 61131-2
Current consumption of module electronics	Max. 0.3 A
Voltage supply of the analog I/O	Internally supplied via DC/DC converters
Potential separation	Yes, opto-decoupled towards E bus; No separation between energy supply and analog channels
Protection against reverse polarity	Yes

Analog Inputs	
16 analog inputs, differential	QAIO 16/4-V: ±10 V; QAIO 16/4-A: ±20 mA
Resolution	12 Bit (multiplex operation)
Input impedance in signal area	QAIO 16/4-V: 10 MΩ; QAIO 16/4-A: 50 Ω

Analog Outputs	
4 analog outputs	±10 V
Resolution	12 Bit
Output current	Max. 5 mA
Load resistance	Min. 2 kΩ
In-phase area	±2 V

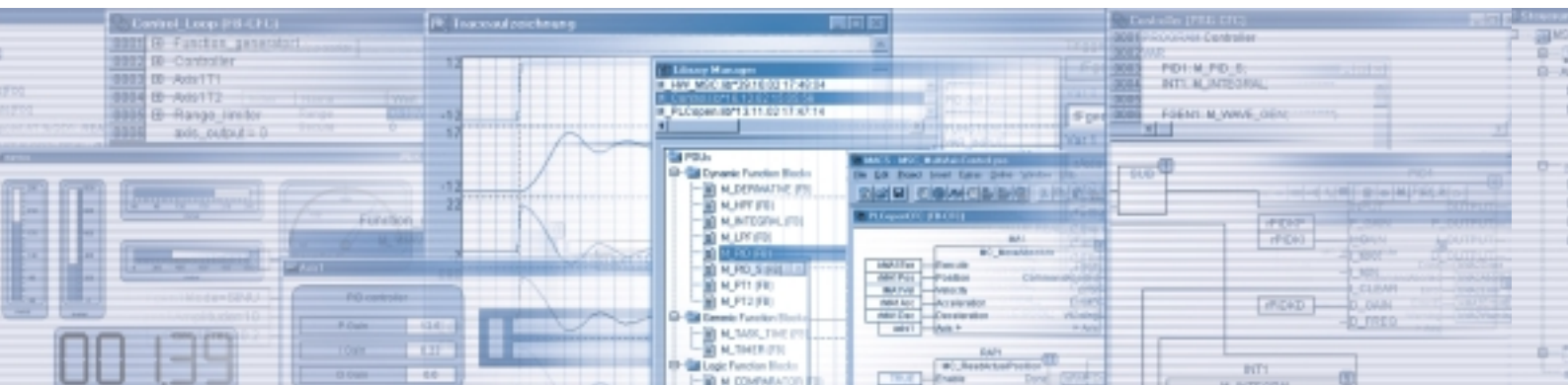
Reference Voltage Source	
Reference voltage	+10 V DC sustained short circuit protection
Load current	Max. 5 mA
Precision	0.1 %

Accessories		
Plug-in terminal strips (5 are required per module)		
Designation	Description	Order number
Screw terminal, 18-pole	Up to max. conductor cross-section of 2,5 mm <sup>2</sup> (14 AWG)	VK055-018
Spring-power clamp, 18-pole	Up to max. conductor cross-section of 2,5 mm <sup>2</sup> (14 AWG)	B95907-018

Detailed information and integration tips can be obtained from the users' manuals referenced.



**Argentina**  
**Australia**  
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**Brazil**  
**China**  
**Finland**  
**France**  
**Germany**  
**Great Britain**  
**India**



**Ireland**  
**Italy**  
**Japan**  
**Korea**  
**Luxembourg**  
**Norway**  
**Philippines**  
**Russia**  
**Singapore**  
**South Africa**  
**Spain**  
**Sweden**  
**USA**

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Our quality standard is according to DIN EN ISO 9001.

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The modules described in this catalog have passed the EMV examination according to the EU directive.

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#### **NOTES**

This catalog is intended for users with technical knowledge. In order to ensure that the peripheral conditions necessary for the function and the safety of the system have been fulfilled, the user must examine the suitability of the modules described herein. Please contact Moog for further clarification.

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Technical changes are reserved.

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