akribis

USER GUIDE

# MIO 12

Produal

Distributed by AKRIBIS



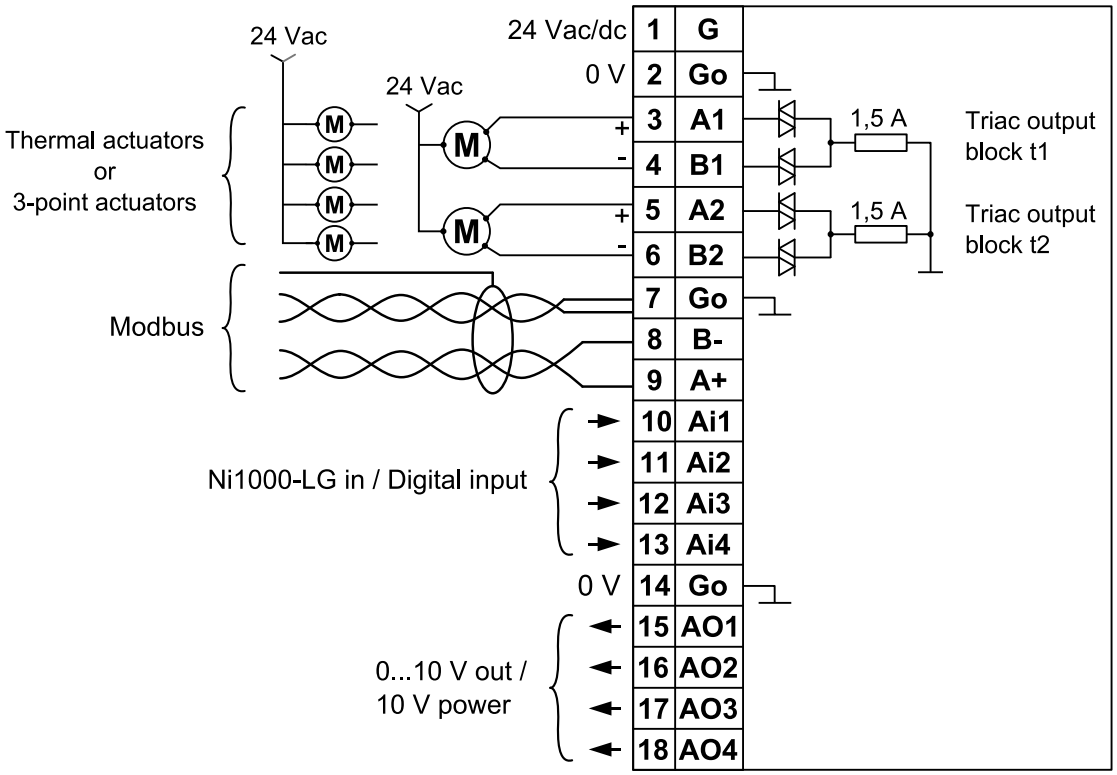
## COMMISSIONING

### Wiring

Caution

Device connection and commissioning can only be carried out by qualified professionals. Always make the connections while the power is switched off.

**NOTE:** Triac outputs (A1, B1, A2 and B2) do not work with 24 Vdc supply.



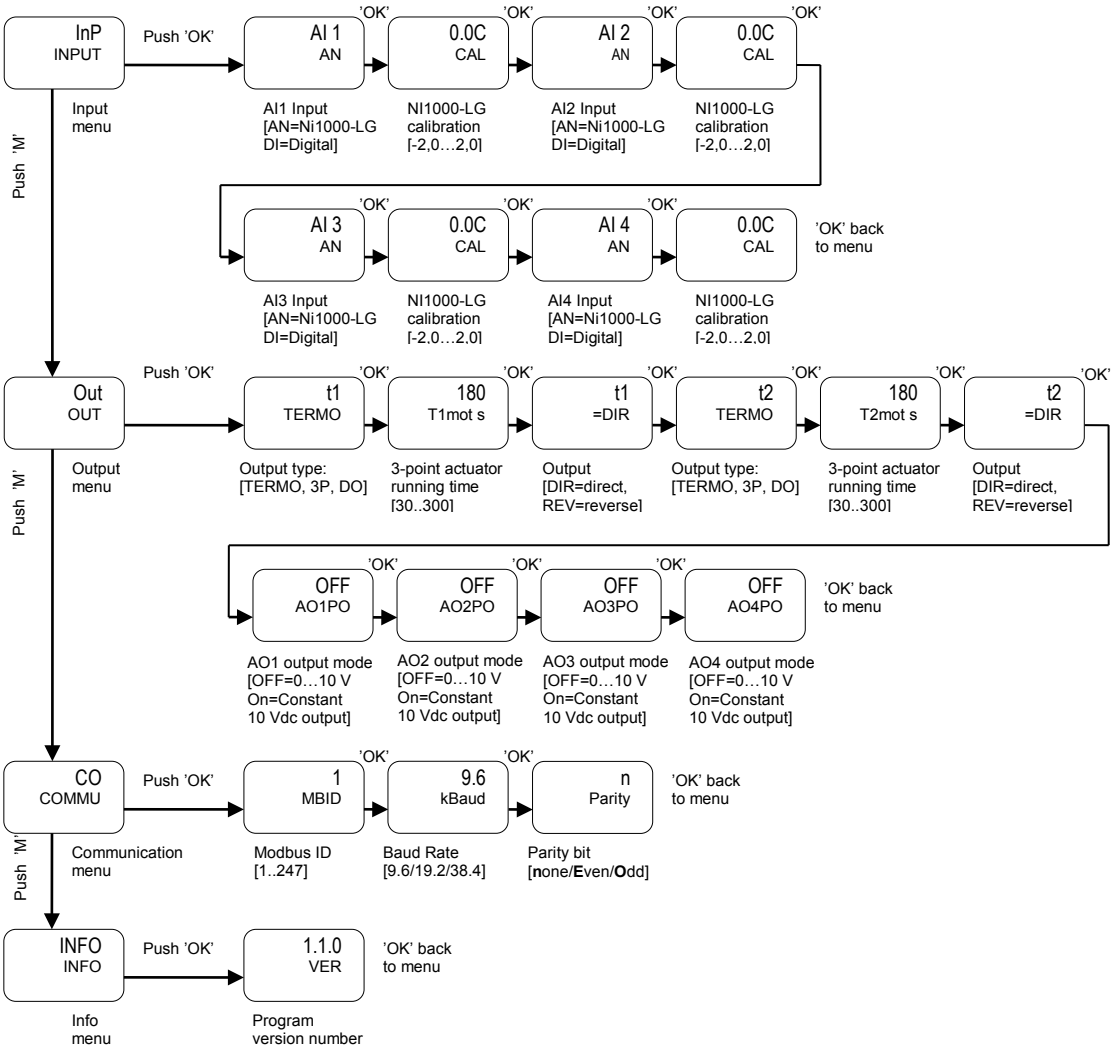


Information is subject to change without prior notice.

## Menu

The device menu can be activated by pressing the buttons in the following sequence: “+”, “OK”, “OK”, “M”. You can exit the menu by pressing the “M” button for 5 seconds.

You can proceed in the menu by touching the “M” or “OK” buttons. The values can be changed with the “+” and “-“ buttons. The value is accepted with the “OK” button. The following menu structure contains the factory settings.




### Inputs (AI1…AI4 / DI1…DI4)

Inputs can be set either digital or analogue (Ni1000-LG) inputs. Via Modbus it is possible to read the status of the digital inputs and the number of the digital pulses summed in the counter. The counter is reset after reading.

### Analogue outputs

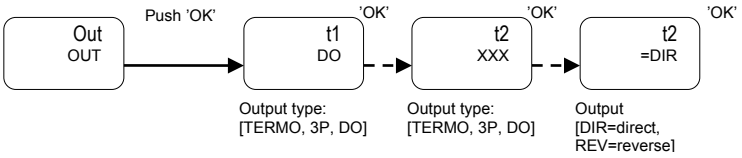
The analogue outputs (AO1, AO2, AO3 and AO4) can be controlled separately to provide constant 10 Vdc output. The output can then be used as a supply voltage for a potentiometer, for example.

Information is subject to change without prior notice.

### Digital outputs (DO = ON/OFF)

The settings of the blocks t1 and t2, with triac outputs, will be made by using the Output menu.

The example below indicates that the outputs A1 and B1 of the block t1 are controlling two digital outputs (DO = On/Off). No setting has been made for the outputs A2 and B2 of the block t2.

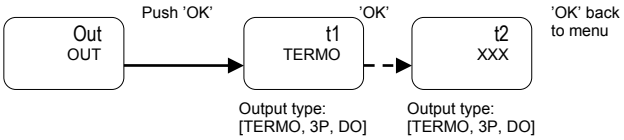



**NOTE:** The DIR/REV selection is not available for digital outputs.

### Thermal actuator outputs

The settings of the blocks t1 and t2, with triac outputs, will be made by using the Output menu.

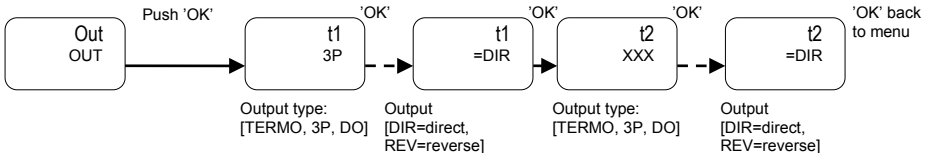
The example below indicates that the outputs A1 and B1 of the block t1 are controlling thermal actuators. No setting has been made for the outputs A2 and B2 of the block t2.




### 3-point actuator outputs

The settings of the blocks t1 and t2, with triac outputs, will be made by using the Output menu.

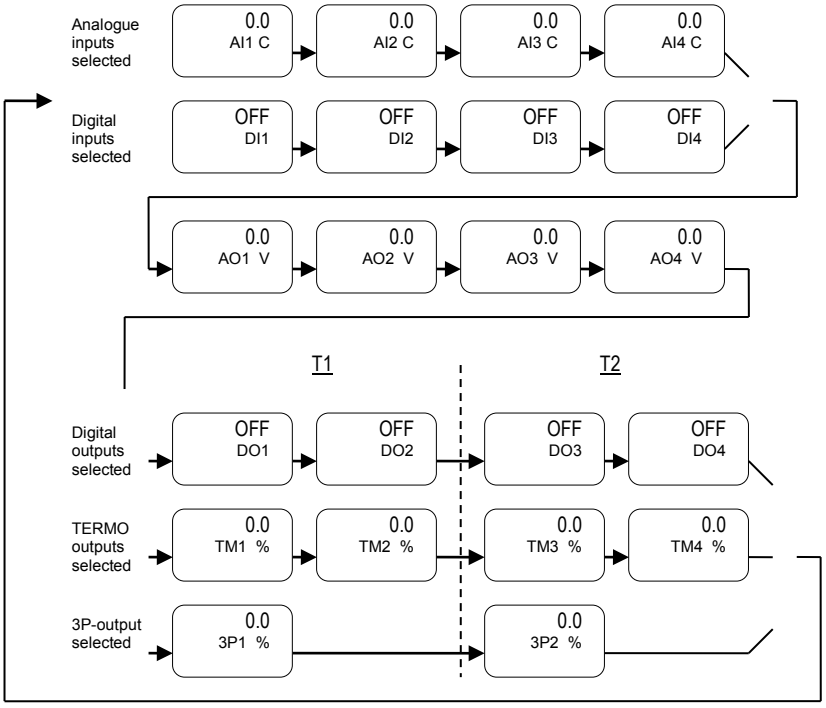
The example below indicates that the outputs A1 and B1 of the block t1 are controlling one directly working 3-point actuator. No setting has been made for the outputs A2 and B2 of the block t2.




Information is subject to change without prior notice.

## USER MODE

Values or statuses of the inputs and outputs can be seen on the device display. The information on the display is changing automatically as shown in the following figure.




The changing of the displays can be stopped by pushing 'OK' when the wanted value is on the display.

The views can be changed manually by pushing the "OK" button. The views start changing automatically if the buttons are not pushed for 60 seconds.

### Changing the output values

The output values can be changed via Modbus or with the device buttons. The possibility to control the output values with the device buttons is useful when commissioning.

**NOTE:** The value set with the device buttons will be overwritten when the same output is controlled via the Modbus.

Changing the output values with the device buttons:

1. Select the output by pressing the "OK" button.
2. Press the "M" button.
3. Change the output value by pressing the "+" and "-" buttons.
4. Accept the value by pressing the "OK" button.


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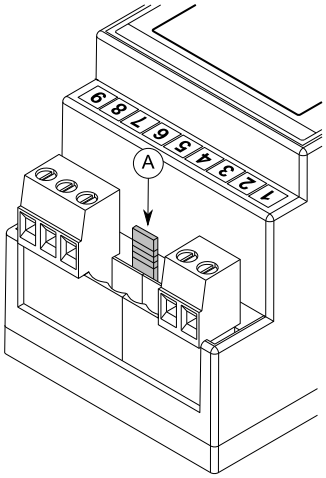
## MODBUS

### Bus properties

| | |
|---|---|
| Protocol | RS-485 Modbus RTU |
| Bus speed | 9600/19200/38400 bit/s |
| Data bits | 8 |
| Parity | none/odd/even |
| Stop bits | 1 |
| Network size | up to 127 devices per segment |

### Bus termination

The Modbus can be terminated by placing the termination jumper.




A. Termination jumper

### Supported Modbus functions

| | |
|---|---|
| 0x01 | Read Coils |
| 0x02 | Read Discrete Inputs |
| 0x03 | Read Holding Registers |
| 0x04 | Read Input Registers |
| 0x05 | Write Single Coil |
| 0x06 | Write Single Register |
| 0x0F | Write Multiple Coils |
| 0x10 | Write Multiple Registers |
| 0x17 | Read/Write Multiple Registers |

### Modbus registers

Data type:

| | |
|---|---|
| bit | = 0 or 1 |
| unsigned | = unsigned integer (0…65535) |
| signed | = integer (-32768…32767) |

**NOTE:** The memory durability is 1 000 000 write cycles.

Coils (read / write)

| Register | Parameter description | Data type | Value | Range | Default |
|---|---|---|---|---|---|
| **1** | DO1 - manual mode | bit | 0…1 | 0=off, 1=on | 0 |
| **2** | DO2 - manual mode | bit | 0…1 | 0=off, 1=on | 0 |
| **3** | DO3 - manual mode | bit | 0…1 | 0=off, 1=on | 0 |
| **4** | DO4 - manual mode | bit | 0…1 | 0=off, 1=on | 0 |


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Discrete inputs (read only)

| Register | Parameter description | Data type | Value | Range |
|---|---|---|---|---|
| 1000**1** | AI1 Digital Input | bit | 0…1 | 0=off, 1=on |
| 1000**2** | AI2 Digital Input | bit | 0…1 | 0=off, 1=on |
| 1000**3** | AI3 Digital Input | bit | 0…1 | 0=off, 1=on |
| 1000**4** | AI4 Digital Input | bit | 0…1 | 0=off, 1=on |

Input registers (read only)

| Register | Parameter description | Data type | Value | Range |
|---|---|---|---|---|
| 3000**1** | AI1 value | Signed 16 | -500…+1500 | -50…+150 °C |
| 3000**2** | AI2 value | Signed 16 | -500…+1500 | -50…+150 °C |
| 3000**3** | AI3 value | Signed 16 | -500…+1500 | -50…+150 °C |
| 3000**4** | AI4 value | Signed 16 | -500…+1500 | -50…+150 °C |
| 3000**5** | AI1 digital counter | Unsigned 16 | 0…65535 | 0…65535 |
| 3000**6** | AI2 digital counter | Unsigned 16 | 0…65535 | 0…65535 |
| 3000**7** | AI3 digital counter | Unsigned 16 | 0…65535 | 0…65535 |
| 3000**8** | AI4 digital counter | Unsigned 16 | 0…65535 | 0…65535 |

Holding registers (read / write)

| Register | Parameter description | Data type | Value | Range | Default |
|---|---|---|---|---|---|
| 4000**1** | AO1 value | Signed 16 | 0…1000 | 0.0…100.0 (%) | 0 |
| 4000**2** | AO2 value | Signed 16 | 0…1000 | 0.0…100.0 (%) | 0 |
| 4000**3** | AO3 value | Signed 16 | 0…1000 | 0.0…100.0 (%) | 0 |
| 4000**4** | AO4 value | Signed 16 | 0…1000 | 0.0…100.0 (%) | 0 |
| 4000**5** | 3P MOTOR1 VALUE or THERM1 out | Signed 16 | 0…1000 | 0.0…100.0 (%) | 25 |
| 4000**6** | THERM2 out | Signed 16 | 0…1000 | 0.0…100.0 (%) | 0 |
| 4000**7** | 3P MOTOR2 VALUE or THERM3 out | Signed 16 | 0…1000 | 0.0…100.0 (%) | 25 |
| 4000**8** | THERM4 out | Signed 16 | 0…1000 | 0.0…100.0 (%) | 0 |


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