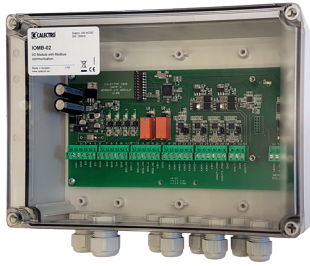


IOMB-02 INSTALLATION INSTRUCTIONS

EN



ENGLISH

I/O-Module with Modbus RTU communication, 4 digital and 4 analogue inputs and 2 digital and 2 analogue outputs/PWM.



DANGER: IMPORTANT INFORMATION ON ELECTRICAL SAFETY AND THE ENVIRONMENT

The product's relay switch can be powered with 230V. The power must be switched off during maintenance.

TECHNICAL DATA

| | |
|--------------------------------|--|
| Supply voltage: | 24V AC/DC $\pm 10\%$ |
| Power consumption | <100 mA, excl. PWM output |
| Analogue inputs: | 4 x 0-10V DC, (input impedance 5.3 k Ω) or 4 x Pt1000/Ni1000LG |
| Analogue outputs: | 2 x 0-10V DC / PWM |
| - Max load/output 0-10V: | >5 k Ω imp. |
| - Max load PWM: | 1A (24V) |
| Digital inputs: | 4, via potential-free closing contact |
| Digital outputs, relay: | 2 x 5A, 250V |
| Indicators LED: | 6 amber: Digital I/O, 1 green: Operation/communication |
| Communication: | Modbus RTU (RS485) |
| - RS485 unit load: | 96k Ω (1/8 UL) |
| - Parity selectable: | None, even, odd |
| - Stop bits: | 1 or 2, selectable for no parity |
| - Speed (baud rate, kbps): | 9.6 / 19.2 / 38.4 / 57.6 |
| - Address: | 1-64 |
| - Terminating resistor: | 120 Ω via jumper J7 |
| Ambient temperature: | -20 till +50 $^{\circ}$ C |
| Cable inlets: | 6 x M16 and 2 x M20 |
| Weight grams: | 778 g |
| Dimensions (WxHxD): | 250x175x75 mm |
| Protection class: | IP67 |

APPLICATION

IOMB-02 is used to collect and distribute analogue and digital signals to and from regulators (DUC) using Modbus RTU communication.

FUNCTION

IOMB-02 is an IP67 enclosed I/O module that transmits measurement and control signals via Modbus to and from DUC regulators. IOMB-02 has 4 digital and 4 analogue inputs and 2 digital and 2 analogue outputs.

The analogue outputs can be configured via Modbus for either 0-10V or PWM output for controlling, for example, a thermal actuator. **NB** 0-10V or PWM for respective analogue output.

The analogue inputs can be configured (via jumpers) to receive either 0-10V or temperature sensor (Pt1000/Ni1000LG). Choice of Pt1000 or Ni1000LG is set on the Modbus register 4x0026-29.

The digital in and outputs both have an amber LED. The green operation LED blinks during Modbus communication.

Addressing, choice of parity and baud rate is set with DIP switches. IOMB-02 should be de-energised at these settings.

The housing has 6 M16 and 2 M20 cable fittings.

Selectable default function: IOMB-02 has a selectable function for dealing with interruptions in the Modbus communication. This means that the two digital and analogue outputs can be set individually should the Modbus communication be interrupted for a certain amount of time. The time for communication interruption before the default function kicks in can be set between 1 and 600 seconds. If set to 0 seconds then the function is deactivated (factory setting).

As an accessory, a Modbus-IP gateway is available for retrofit.

MOUNTING

IOMB-02 is wall-mounted.

MAINTENANCE

IOMB-02 is maintenance-free.

LED INDICATION

| LED Diod | Function | Status |
|-----------|----------------------|--------|
| L1 | DIN1 | Closed |
| L2 | DIN2 | Closed |
| L3 | DIN3 | Closed |
| L4 | DIN4 | Closed |
| L5 | DUT1 | Active |
| L6 | DUT2 | Active |
| L7 | Operation | |
| L7 Blinks | Modbus communication | Active |

ANALOG INPUTS, CONFIGURATION OF JUMPERS

| | | | |
|---------|---------|---------|---------|
| J1: AI1 | J2: AI2 | J3: AI3 | J4: AI4 |
| Pt1000* | Pt1000* | Pt1000* | Pt1000* |
| 0-10V | 0-10V | 0-10V | 0-10V |

* Choice of Pt1000 or Ni1000LG is set on the Modbus register 4x0026-28.

MODBUS SETTINGS

(DIP switch: 0 = OFF / 1 = ON)

| Modbus ID | DIP switch 1,2,3,4,5 and 6 |
|-----------|----------------------------|
| 1 | 000000 |
| 2 | 100000 |
| 3 | 010000 |
| 4 | 110000 |
| 5 | 001000 |
| 6 | 101000 |
| 7 | 011000 |
| 8 | 111000 |
| 9 | 000100 |
| 10 | 100100 |
| 11 | 010100 |
| 12 | 110100 |
| 13 | 001100 |
| 14 | 101100 |
| 15 | 011100 |
| 16 | 111100 |
| 17 | 000010 |
| 18 | 100010 |
| ... | ... |
| 64 | 111111 |

| Modbus Parity | DIP switch 7 and 8 |
|--------------------|--------------------|
| None (2 stop bits) | 00 |
| None (1 stop bit) | 11 |
| Even (1 stop bit) | 10 |
| Odd (1 stop bit) | 01 |

| Modbus Baud rate | DIP switch 9 and 10 |
|------------------|---------------------|
| 9600 | 00 |
| 19200 | 10 |
| 38400 | 01 |
| 57600 | 11 |

MODBUS REGISTER

I/O Module MODBUS register.

| Coils (0x) | Function | Range |
|----------------------|--|--------------|
| 0x0001 | Digital output #1 | Off or On |
| 0x0002 | Digital output #2 | Off or On |
| Discrete inputs (1x) | Function | Range |
| 1x0003 | Digital input #1 | Off or On |
| 1x0004 | Digital input #2 | Off or On |
| 1x0005 | Digital input #3 | Off or On |
| 1x0006 | Digital input #4 | Off or On |
| Input reg. (3x) | Function | Range |
| 3x0009 | Analog input #1 x100 (Volt) | 0 to 1000 |
| 3x0010 | Analog input #2 x100 (Volt) | 0 to 1000 |
| 3x0011 | Analog input #3 x100 (Volt) | 0 to 1000 |
| 3x0012 | Analog input #4 x100 (Volt) | 0 to 1000 |
| 3x0013 | Analog input #1 (Ohms) | 0 to 1300 |
| 3x0014 | Analog input #2 (Ohms) | 0 to 1300 |
| 3x0015 | Analog input #3 (Ohms) | 0 to 1300 |
| 3x0016 | Analog input #4 (Ohms) | 0 to 1300 |
| 3x0017 | Analog input #1 x10 (°C) | -500 to +500 |
| 3x0018 | Analog input #2 x10 (°C) | -500 to +500 |
| 3x0019 | Analog input #3 x10 (°C) | -500 to +500 |
| 3x0020 | Analog input #4 x10 (°C) | -500 to +500 |
| Holding reg. (4x) | Function | Range |
| 4x0001 | Digital output #1 | Range |
| 4x0002 | Digital output #2 | 0 or 1 |
| 4x0003 | Digital input #1 | 0 or 1 |
| 4x0004 | Digital input #2 | 0 or 1 |
| 4x0005 | Digital input #3 | 0 or 1 |
| 4x0006 | Digital input #4 | 0 or 1 |
| 4x0007 | Analog output #1 x100 (Volt) / PWM x10 (%) | 0 to 1000 |
| 4x0008 | Analog output #2 x100 (Volt) / PWM x10 (%) | 0 to 1000 |
| 4x0009 | Analog input #1 x100 (Volt) | 0 to 1000 |
| 4x0010 | Analog input #2 x100 (Volt) | 0 to 1000 |
| 4x0011 | Analog input #3 x100 (Volt) | 0 to 1000 |
| 4x0012 | Analog input #4 x100 (Volt) | 0 to 1000 |
| 4x0013 | Analog input #1 (Ohms) | 0 to 1300 |
| 4x0014 | Analog input #2 (Ohms) | 0 to 1300 |
| 4x0015 | Analog input #3 (Ohms) | 0 to 1300 |
| 4x0016 | Analog input #4 (Ohms) | 0 to 1300 |
| 4x0017 | Analog input #1 x10 (°C) | -500 to 500 |
| 4x0018 | Analog input #2 x10 (°C) | -500 to 500 |
| 4x0019 | Analog input #3 x10 (°C) | -500 to 500 |
| 4x0020 | Analog input #4 x10 (°C) | -500 to 500 |

| | | |
|--------|--|-----------|
| 4x0021 | Digital output #1 default value *1 | 0 or 1 |
| 4x0022 | Digital output #2 default value *1 | 0 or 1 |
| 4x0023 | Analog output #1 default value *1 x100 (Volt) / PWM x10 (%) | 0 to 1000 |
| 4x0024 | Analog output #2 default value *1 x100 (Volt) / PWM x10 (%) | 0 to 1000 |
| 4x0025 | Timeout for activating default values (4x0021-4x0024) *2 | 0-600 sec |
| 4x0026 | Setting of temperature sensor type, analog input 1: 0=Pt1000, 1=Ni1000LG | 0 or 1 |
| 4x0027 | Setting of temperature sensor type, analog input 2: 0=Pt1000, 1=Ni1000LG | 0 or 1 |
| 4x0028 | Setting of temperature sensor type, analog input 3: 0=Pt1000, 1=Ni1000LG | 0 or 1 |
| 4x0029 | Setting of temperature sensor type, analog input 4: 0=Pt1000, 1=Ni1000LG | 0 or 1 |
| 4x0030 | Analog output type, analog output 1: 0 = 0-10V, 1=PWM | 0 or 1 |
| 4x0031 | Analog output type, analog output 2: 0 = 0-10V, 1=PWM | 0 or 1 |
| 4x0032 | AC power supply detected 0=DC, 1=AC | 0 or 1 |

*1 Selectable default value that can be activated upon loss of communication on the Modbus loop.

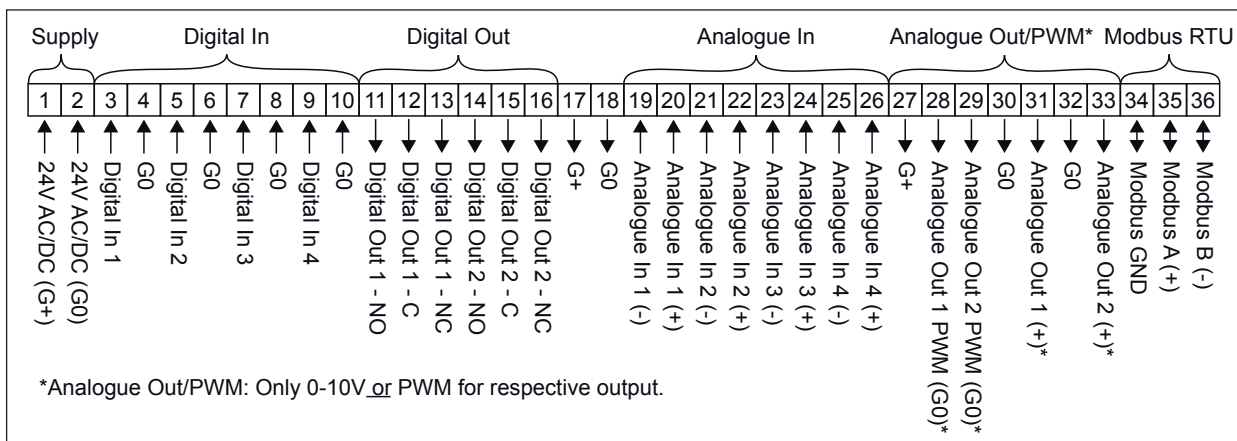
*2 Upon loss of communication (Modbus) lasting longer than the allotted number of seconds (1-600 seconds), the adjustable default values for the registers 4x0021 to 4x0024 are activated. To close the function, select 0 seconds (factory setting).

MODBUS COMMUNICATION

| Reference | Description |
|-----------|--|
| 0x | Read/Write Discrete Outputs or Coils |
| 1x | Read Discrete Inputs |
| 3x | Read Input Registers |
| 4x | Read/Write Output or Holding registers |

Subject to change without prior notice. Omissions and printing errors excepted.

WIRING DIAGRAM



EXAMPLE CONNECTIONS

