MIO 24

The MIO 24 unit is a process signal concentrator that uses RS-485 communication and allows for remote signal display. Likewise, the MIO 24 unit has 4 analogue inputs that operate in the 0 to 20 mA range. The unit handles standard proportional industrial measurement signals and operates in linear form throughout the input range.

The MIO 24 unit also has 2 voltage-free digital inputs; they can be configured to detect logical input state (open or closed) or associated to 2 internal memory registers to count the impulses. In the impulse counting mode, each input can record a maximum of 4,294,967,295 impulses. When the memory record reaches the maximum, the meter resets to zero with the next impulse, starting the counting process again. The minimum duration of the impulse or change of state must be 50 ms and the minimum period of time between two subsequent impulses on the same input must be 50 ms. This represents a maximum sampling frequency of 10 Hz.

The MIO 24 unit has 2 digital relay outputs; these outputs are governed by the RS-485 bus master, which can activate or deactivate them with Modbus commands when requested by the application. The unit has a write function that can perform activation or deactivation operations on any output or generate impulses. The duration of the output impulse is variable, and it can be programmed with Modbus instructions.

TECHNICAL CHARACTERISTICS

Power circuit	
Input voltage	85 … 265 Vac / 120 … 374 Vdc
Frequency	47 … 63 Hz
Maximum consumption	4,6 … 7,5 VA
Environmental conditions	
Temperature range	-10 …. +60ºC
Humidity range	5 …. 95%
Mechanical characteristics	
Enclosure material	Plastic UL94 – V0 Self-extinguishable
Protection grade	IP20
Unit dimensions (Width x Height x Length)	93 x 71 x 58 mm
Weight	180 g
Mounting	DIN Rail (4 modules)
Maximum working altitude	2000 m
Serial interface	
Type	RS-485 three wires
Baud rate	9600 / 19200 bps configurable
Data bits	8
Parity	Without parity
Stop bits	1
Characteristics and electrical security	
Security	CAT III 300 V under EN 61010
Electric shock protection	Double insulation class II
Digital inputs characteristics	
Type	Opto-insulated voltage free
Maximum activation current	50 mA
Analog inputs characteristics	
Type	Current
Input range	0 … 20 mA
Resolution in points	1.024 points
Input impedance	100 Ω
Transducer resolution	10 bits
Digital outputs characteristics	
Tipo	Relay
Maximum operating power	750 Vac

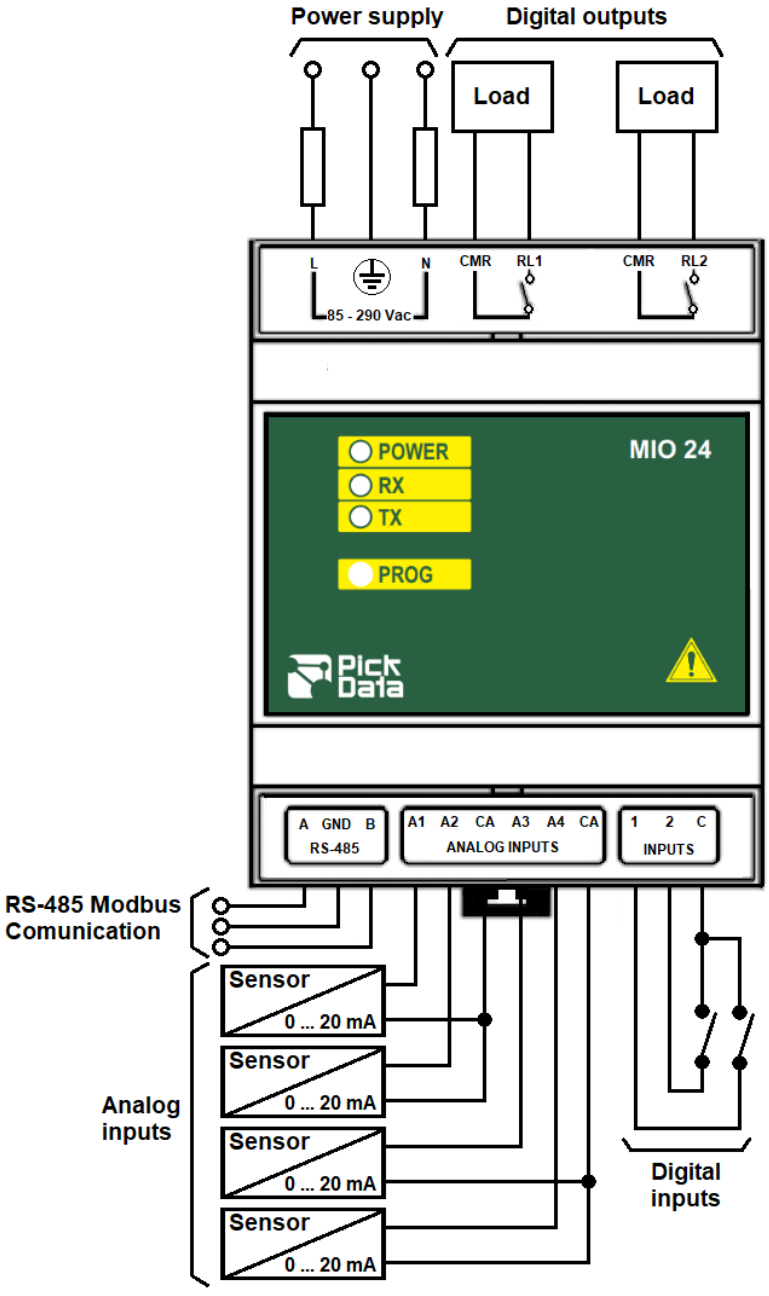
Maximum operating voltage	250 Vac
Maximum switching current	Resistive load I: 5 Aac
Electrical working life (250 Vac / 5 A)	3 x 10^4 operations
Mechanical working life	2 x 10^7 operations
Standards	
Standards	IEC 60664, VDE 0110, UL 94, EN61010-1, EN55011, EN 61000-4-2, EN 61000-4-3, 61000-4-11, EN 61000-6-4, EN 61000-6-2, EN 61000-6-1, EN 61000-6-3, EN 61000-4-5, CE

INSTALLATION

MIO 24 unit must be installed on an electric panel or enclosure, attached to a DIN rail (IEC 60715).

The unit must be connected to a power circuit that is protected with gl (IEC 269) or M type fuses with a rating of 0.5 to 2 A. It must be fitted with a circuit breaker or equivalent device, in order to be able to disconnect the unit from the power supply network. The power circuit must be connected with cables that have a minimum cross-section of 1mm^2. The temperature rating of insulation of wires connected to the device will be at minimum 62ºC.

CONNECTIONS



LEDS

Led	Description
1	**Power** - Activity when device powered on
2	**RX** - Blinking while receiving data from RS-485
3	**TX** - Blinking while sending data by RS-485

RS-485 COMMUNICATION

The device comes equipped with a RS-485 communication port to read and write the parameters of the device or other devices connected. The protocol used is Modbus RTU.

By default the device is configured with **peripheral number 97** (decimal) and **baudrate 19200 bps, 8, N, 1**. Using the command for changing the device number it is possible to assign any other number (maximum FF in hexadecimal or 255 in decimal).
In case you remember the slave number, you can return to default number and communication mode following this steps:

- Power off the device.
- Press permanently the button.
- Power on the device and stop pressing the button

MODBUS RTU COMMANDS

Magnitude	Input Registers	Unit	Function
Peripheral number	0x3000		4,16(0x10)
Baud rate	0x3001	1: 9600 bps 2: 19200 bps	4,16(0x10)
Device version	0x3500-0x3502	Format: "V1.10" values in ASCII and last by always 0	4
Serial number	0x3503-0x3504		4
Meter value 1	0x0000-0x0001		4
Meter value 2	0x0002-0x0003		4
Analogue input 1	0x0500		4
Analogue input 2	0x0501		4
Analogue input 3	0x0502		4
Analogue input 4	0x0503		4
Digital input state Activated = Closed (1) Deactivated = Opened (0)	0x2000	0000: 1 & 2 deactivated 0001: Input 1 activated 0002: Input 2 activated 0003: 1 & 2 activated	4
Digital output control Activated = Closed (1) Deactivated = Opened (0)	0x1000	0000: 1 & 2 deactivated 0001: Output 1 activated 0002: Output 2 activated 0003: 1 & 2 activated	4,16(0x10)
Impulse digital output control Activated = Closed (1) Deactivated = Opened (0)	0x1500	0000: 1 & 2 deactivated 0001: Output impulse 1 0002: Output impulse 2 0003: Output impulse 1 & 2	4,16(0x10)
Impulse duration (Byte Bajo - Relay 1 / Byte Alto - Relay 2)	0x2500	01: Duration 20 ms FF: Duration 5100 ms	4,16(0x10)

MODEL REFERENCE

Model	Reference	Protocol	Communication
MIO 24	C004	Modbus/RTU	RS-485

SAFETY PRECAUTIONS

	**DANGER** Warns of a risk, which could result in personal injury or material damage caused by an incorrect handling or installation of the unit. In particular, handling with voltages applied may result in electric shock, which may cause death or serious injury to personnel. Defective installation or maintenance may also lead to the risk of fire. Read the manual carefully prior to connecting the unit. Follow all installation and maintenance instructions throughout the unit's working life. Pay special attention to the installation standards of the National Electrical Code.

DISCLAIMER

PickData, SL reserves the right to make modifications to the device or the unit specifications set out in this instruction manual without prior notice.

PickData, SL on its web site, supplies its customers with the latest versions of the device specifications and the most updated manuals.

MAINTENANCE AND TECHNICAL SERVICE

Device doesn't require maintenance.
In the case of any query in relation to unit operation or malfunction, please contact the PickData, SL technical support service.

PickData, SL – Technical support service
Calle Innovació, 3
08232 – Viladecavalls (Barcelona), SPAIN
Tel: (34) 935 117 505 (España)
Email: sat@pickdata.net