MIO 40

The electronic meters provide pulse output proportional to the energy measured. **MIO 40** is a centralized energy meter with four inputs (optocoupled) for reading these pulses. Their values are then stored on the memory.

MIO 40 boasts a total of four digital inputs associated to 4 memory registers. Each register has 32 bits (4 bytes), thus boasting up to a maximum of FFFF FFFF hexadecimal, this mean a total of 4,294,967,295 pulses. When this figure is reached, the internal memory register reset on the next pulse and metering starts again.

The minimum duration of the pulse or the change of status must be 50 ms and the minimum time between the successive pulse on the same input must be 50 ms. This represents a maximum sample frequency of 10 Hz.

MIO 40 has a total of 4-relay type outputs, these outputs are governed by the master which can activate or deactivate them as required by the application. The appliance boasts a write function; it is able to provide an activation or deactivation pulse at any output. The duration of the pulse is variable and is programmed on the equipment; the minimum value is 20 ms and the maximum 5.1 seconds (5100 ms = 255x20), 255 = FF in hexadecimal and 20 is the minimum value in milliseconds.

TECHNICAL CHARACTERISTICS

Power circuit	
Input voltage	85 ... 265 V a.c. / 120 ... 374 V d.c.
Frequency	47 ... 63 Hz
Maximum consumption	4,6 V·A a.c. / 2,5 V·A d.c
Environmental conditions	
Temperature range	-10ºC ... +50ºC
Humidity range	5% ... 95%
Mechanical characteristics	
Enclosure material	Plastic UL94-V0 Self-extinguishing
Protection grade	IP 31
Unit dimensions (Width x Height x Length)	93 x 71 x 58 mm
Weight	170 g
Mounting	DIN rail
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
Protection class	50 mA
Digital inputs	
Type	Free voltage input, optical isolator
Maximum activation current	50 mA
Digital outputs	
Type	Relay
Nominal voltage	250 Vac
Electrical endurance	$3 \cdot 10^4$ operations
Nominal current With resistive load With inductive load (A.C.) With inductive load (D.C.)	 250 Vac / 5 A ac 250 Vac / 2 A ac 24 V dc / 5 A dc
Standards	
Standards	IEC 60664, VDE 0110, UL 94, EN-61010-1, EN 55011, EN 61000-4-3, EN 61000-4-11, EN 61000-6-4, EN 61000-4-2, EN 61000-6-2, EN 61000-6-1, EN 61000-6-3, EN 61000-4-5 -CE

INSTALLATION

The unit is installed on a DIN rail and all connections remain inside the electric panel.

The unit must be connected to a power supply circuit protected with fuses of the gl (IEC 269) or M type, between 0.5 and 2 A. Likewise, the unit must have a built-in circuit breaker or equivalent device to disconnect the unit from the power supply network. The power supply circuit will be connected with a cable that has a minimum section of 2,5mm^2.

CONNECTIONS AND LEDS
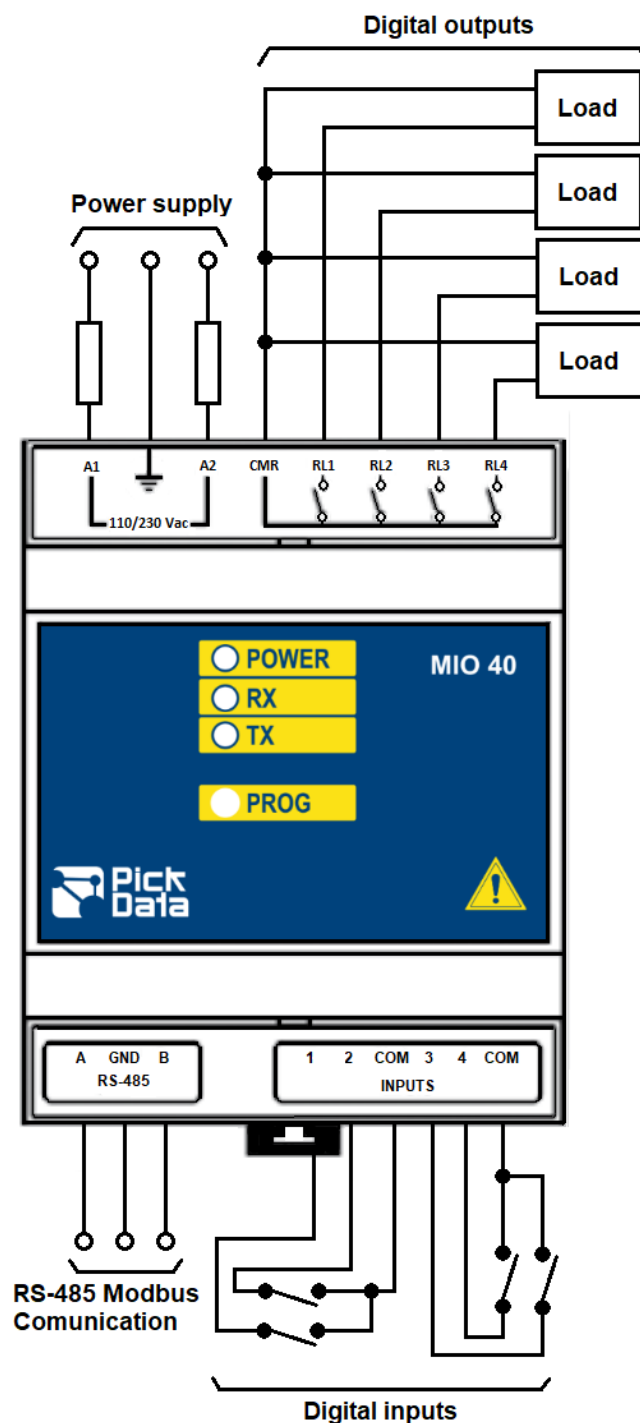
LEDS

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

COMMUNICATION

An RS-485 communication port is available, for the read/write of the 4 meters of the **MIO 40** thanks to a management application. For this purpose, the MODBUS RTU © communication protocol is used.

Functions are available for reading and zero resetting of the different meters, reading and writing of the relay activation time or for the permanent activation and deactivation of the relay itself, to change the communication speed parameters and the slave address of the equipment.

The equipment, by default, **comes with the address 98** (62 in hexadecimal). The appliance communication speed by default is **19200, 8, N, 1.**

This speed can be changed using a MODBUS RTU ©, **command at a speed of 9600, 8, N, 1**, with the same command it can vary the speed as required by the installation.

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
Meter value 3	0x0004-0x0005		4
Meter value 4	0x0006-0x0007		4
Digital input state Activated = Closed (1) Deactivated = Opened (0) Minimum 0 Maximum F	0x2000	0000: deactivated inputs 0001: Input 1 activated 0003: Input 1&2 activated Bin 0001: LSB E1 Bin 1000: MSB E4	4
Digital output control Activated = Closed (1) Deactivated = Opened (0) Minimum 0 Maximum F	0x1000	0000: deactivated outputs 0001: Output 1 activated 0003: Output 1&2 activated Bin 0001: LSB E1 Bin 1000: MSB E4	4,16(0x10)
Impulse digital output control Activated = Closed (1) Deactivated = Opened (0) Minimum 0 Maximum F	0x1500	0000: deactivated pulses 0001: Output impulse 1 0003: Output impulse 1&2 Bin 0001: LSB E1 Bin 1000: MSB E4	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 40	C010	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
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