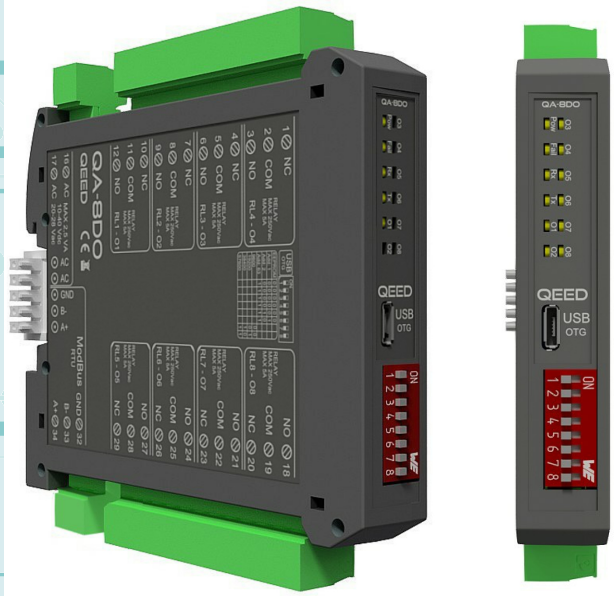
I/O DIGITAL INTERFACE - 8 RELAYS OUTPUT
RS485 MODBUS Slave
QA-8DO

MADE IN ITALY CE UK CA

I/O Digital Modbus Slave Interface, **USB configurable**, DIN rail mounting, **3-way galvanically isolated**, universal power supply AC/DC, **n° 8 DIGITAL OUTPUT RELAYS.**



The images/schemes proposed are to be considered indicative and not binding

POWER SUPPLY	10..40 Vdc, 20-28 Vac, 50-60 Hz
OUTPUT	n°8 relays output SPDT 5 A / 250 VAC, n°1 RS485 Modbus Slave
ABSORPTION	Maximum 2,5 VA
PROTECTION INDEX	IP 20
WORKING TEMPERATURE	-15…+65°C
STORAGE TEMPERATURE	-40°C… +85°C
ISOLATION	3 way: serial output RS485,USB port and Power supply, are galvanically isolated at 1,5 kV. Relays output are isolated at 4 kV.
HUMIDITY	10...90% not condensing
ALTITUDE	Up to 2000 m s.l.m.
MOUNTING	DIN rail mounting with removable terminals, RS485 bus and Supply connection ready on the base of module (connector not included, on request)
CONNECTIONS	Removable terminals 5,08 mm
CE STANDARDS	EN61000-6-4/2006 + A1 2011; EN64000-6-2/2005; EN61010-1/2010
DIMENSIONS	17,5 x 100 x 112 mm (terminals excluded)
CONFIGURATION	By free software FACILE QA-8DO to configure all of the conversion parameters. Dip-switch for setting modbus address and baudrate.
HOT SWAPPING	The module QA-8DO has HOT SWAPPING technology, this enables the module to be inserted and removed from the system without the need to restart the device Modbus Master connected to it

DIGITAL AND SERIAL OUTPUT:

DIGITAL OUTPUT: n°8 relays SPDT 5A / 250 VAC.
SERIAL OUTPUT:

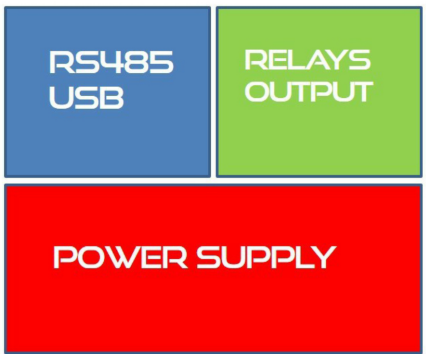
- RS485 Modbus Slave;
- Bus connection on the base of module by adapter (option) or on terminals. Dip-switch for setting address and baudrate.

N°8 RELAYS OUTPUT:

SPDT RELAYS 5 A / 250 VAC

MASTER MODBUS: PLC - HMI - PC

3-WAY GALVANIC ISOLATION



QA-8DO
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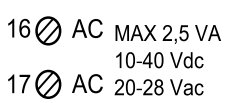
RS485 MODBUS Slave

INSTRUCTION MANUAL QA-8DO

DESCRIPTION:

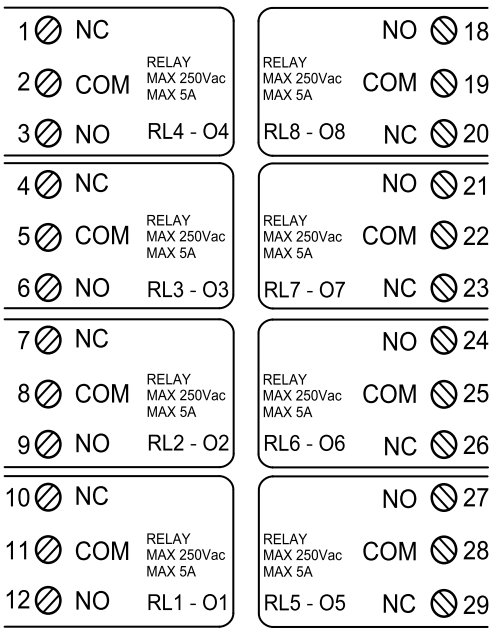
The QA-8DO is a slave module with n°8 relays output. Thanks to the presence of the RS485 serial port can perform advanced functions such as I/O module with Modbus RTU protocol.

ELECTRICAL CONNECTIONS



POWER SUPPLY:

10...40 Vdc or 20...28 Vac - Connectors 16 and 17, or by T-BUS connector (optional tool) on the base of the module.



DIGITAL OUTPUT:

n°8 relays SPDT 5 A / 250 Vac.

RL1 - O1: digital output n°1.

RL2 - O2: digital output n°2.

RL3 - O3: digital output n°3.

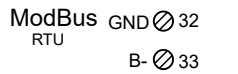
RL4 - O4: digital output n°4.

RL5 - O5: digital output n°5.

RL6 - O6: digital output n°6.

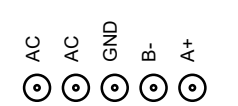
RL7 - O7: digital output n°7.

RL8 - O8: digital output n°8.



SERIAL OUTPUT RS485:

available on connectors 32 (GND), 33 (B-), 34 (A+), or by T-BUS connector to be mounted on the module.



T-BUS CONNECTION (OPTION), needs T-BUS connector:

it may be affixed to the accessory T-BUS based on the module to bring both power and serial communication. The number of modules supported by the bus is a function of the power supply used (check the absorption of the modules).

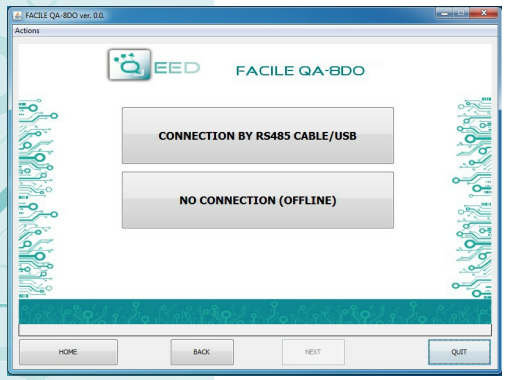
PROGRAMMING THE DEVICE BY SOFTWARE QA-8DO

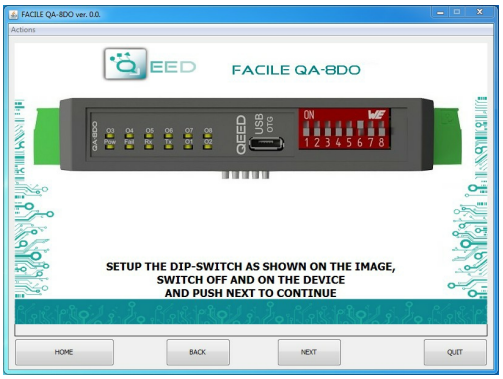
The programming of the module QA-8DO may be performed in two different ways:

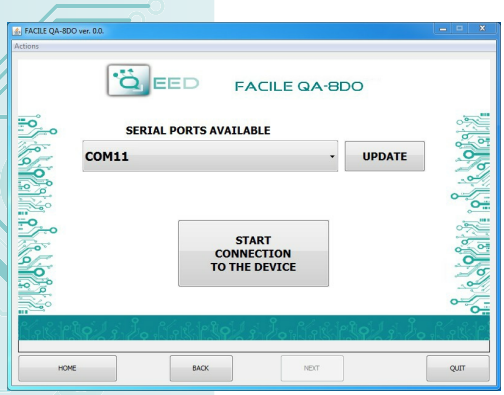
- via the interface program free FACILE QA-8DO through the micro USB port on the module or via RS485 connection;
- via the RS485 serial connection (from terminal or T-Bus).

The QA-8DO is equipped with a microprocessor, it is possible to configure the module by connecting it to the USB port of your PC without taking power, this is possible because the QA-8DO is equipped with a microprocessor that manages the configuration and it is powered directly from the USB port.

To use the program FACILE QA-8DO, go on our website www.qeed.it section DOWNLOAD / SOFTWARE AND DRIVERS / I/O MUDBUS SYSTEM / QA-8DO: CONFIGURATION SOFTWARE, you can install the program on your PC. Once downloaded, install it in the desired directory and run the program.



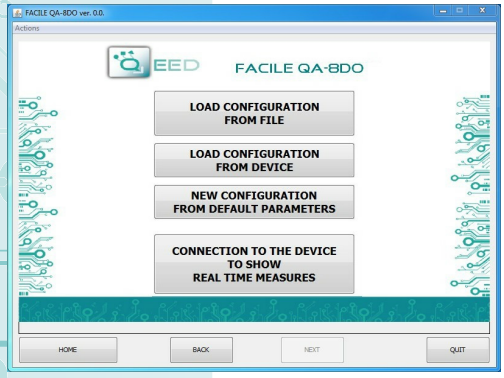




It is possible to use the program without connecting to the module, in this mode you can SAVE the configuration on your PC, which can then be sent to the QA-8DO at a later time.

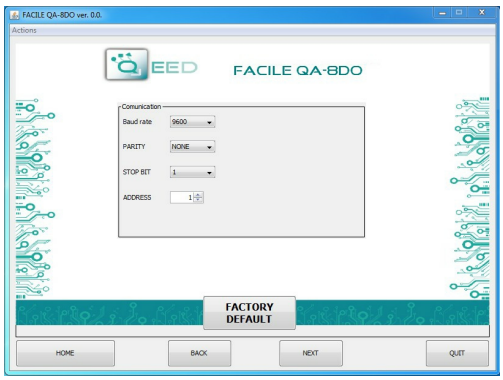
SERIAL PORTS AVAILABLE:

check the available COM ports, press the UPDATE button. Your PC will assign a virtual COM connection with the QA-8DO. Press START CONNECTION WITH THE DEVICE. It will confirm you the connection was successful with the module. If the connection does
not happen, please check the RS485 serial connection (A +, B-), the position of the dip-switches (switching off and on the device) and the COM generated automatically by the device.
After connecting, you can proceed with the configuration of the device.



CONFIGURATION:
by selecting the first two boxes on this page you can load the parameters "FROM FILE " and "FROM DEVICE".
To run a new configuration starting from the default settings, click on "NEW CONFIGURATIONFROM DEFAULT PARAMETERS".
By clicking the last box, there will be shown the "REAL TIME" measures performed by the device.

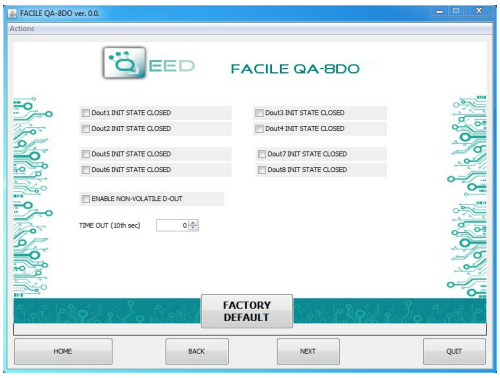
PROGRAMMING THE DEVICE BY SOFTWARE QA-8DO



MODBUS COMMUNICATION:

This is the last window of the device configuration. The left column contains the parameters to be set for the communication speed BAUDRATE (from 1200 to 115200), the PARITY (None, Odd, Even), the STOP BIT (1 or 2), the Modbus address to be assigned to the device.

FACTORY DEFAULT:
by clicking on this box, all settings return to the default value.

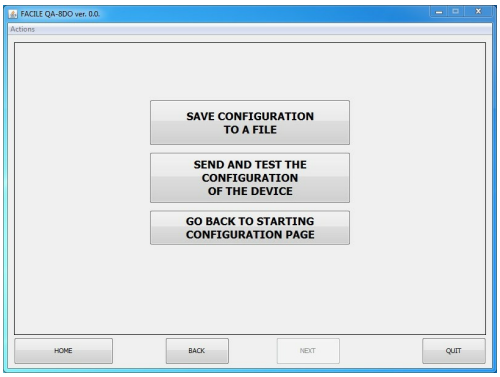


D-OUT INIT-STATE:
selecting the respective box, the state from normally open (NO) switch to a normally closed (NC).

ENEABLE NON-VOLATILE D-OUT: enabling this field, the outputs state is stored in nonvolatile memory. At power up, the outputs will take this state.

TIME OUT: enabling the time out (0 - disabled), the device show the outputs to the initial condition when the communication with the "master" module is interrupted.

FACTORY DEFAULT:
by clicking on this box, all settings return to the default value.



The picture on the right show the last page of the software FACILE QA-8DO. By clicking on the first box you can save the configuration to a file. By clicking on the box in the middle of the page you can send (to QA-8DO) and test the configuration. By clicking on the last box you can return to the configuration page.

MODBUS REGISTER MAP QA-8DO

ADDRESS LIST BASE 1 (40001)
MICROPROCESSOR'S REGISTERS BASE 0 (0000)
EXAMPLE _ to read register 40003 (address device = 1)
Tx: <01> <03> <00> <02> <00> <01> <25> <CA>

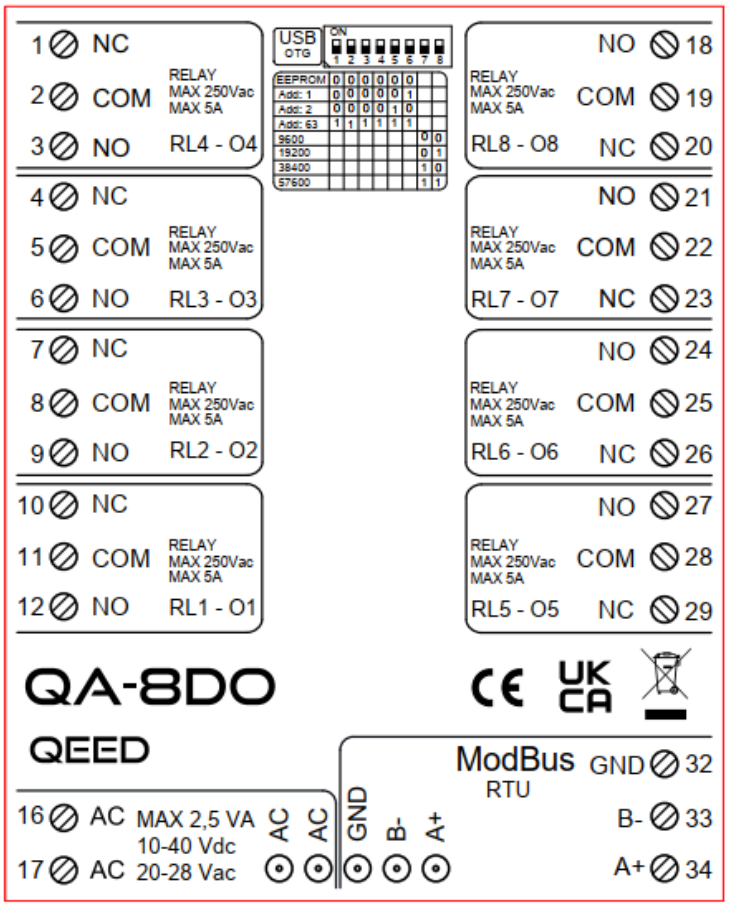
REMARKS:
- Modbus connections: A+ and B-;
- Modbus Register reference: with reference to the logical address, for ex. 40010, corresponds to physical address n°9 as per Modbus RTU standard;
- Modbus functions supported: 3 (Read multiple registers), 6 (Write single), 16 (Write multiple).

Register Name	Comment	Register Type	R/W	Default Value	Modbus Address
machine_id	Machine ID	unsigned short	R	27	**40001**
fw_ver	Firmware version	unsigned short	R	xxx	**40002**
status	bit[0]=fail eeprom calibration; bit[1]=fail eeprom configuration; bit[2] = fail hw; bit[3]=fail log; bit[4]=fail rtc, bit[5]=fail eeprom; bit[6]=fail fram_init; bit[7]=fail fram	unsigned short	R	0	**40003**
digital_output_eff	(bit 0 = dout1 ... bit 7 = dout8) real output state	unsigned short	R		**40005**
dip	DIPSW status : bit 0-7=dip switch status	unsigned short	R		**40006**
digital_output_imp	(bit 0 = dout1 ... bit 7 = dout8)	unsigned short	R/W		**40011**
timeout_comm	timeout [sec*10], after wich output are switched to dout_init_state. (0= disabled)	unsigned short	R/W	0	**40079**
dout_init_state	: bit 0 dout1 ... bit 7 dout8; bit14=1 enable timeout; bit15=1 enable FRAM for DOUT	unsigned short	R/W	0	**40093**
modbus_addr_parity_stopbits	: MSB = address (1); LSB = bit[1-0] parity = none/odd/even; bit[2] =stopbit 1 or 2	unsigned short	R/W	256	**40094**
modbus_baudrate	: value 0=1200,1=2400,2=4800,3=9600,4=19200,5=38400, 6=57600,7=115200	unsigned short	R/W	3	**40095**
command	SAVE_TARAT = 0XC1B0; SAVE_SETT = 0XC1C0; LEGGIDIP = D166; RESET = C1A0	unsigned short	R/W	0	**40121**
uid_l	Calibration file name	unsigned short	R/W		**40124**
uid_m	Calibration file name	unsigned short	R/W		**40125**
uid_h	Calibration file name	unsigned short	R/W		**40126**
hw_version	Hardware version	unsigned short	R/W		**40127**

Upgrade FIRMWARE

The QA-8DO is designed to upgrade the firmware via the USB port using a standard pen drive where the file will be placed. The firmware will allow you to implement the functionality of the card and correct any anomalies that may occur. In order to upgrade the firmware simply, remove power from the module, insert the pen drive with the file, restore power, at this point the card will automatically discharge the file and update the firmware without altering the configuration loaded during programming. During the update phase the LED light will be intermittent FAIL.

QUICK GUIDE QA-8DO



MODBUS ADDRESS CONFIGURATION AND BAUD RATE BY DIP-SWITCH

Through the dip-switch on the front panel of the module, you can change the Modbus address and baud rate. In the case in which all the dip switches are set to zero, the module will take the calibration fromEEPROM, otherwise it will take parameters from a dip-switch.
In order to assign addresses more than 63, you need to take advantage of the interface software FACILE QA-8DO.
In order to assign values of baud rates different from those selectable dip you need to take advantage of the interface software FACILE QA-8DO.

POWER SUPPLY by TERMINALS:

10...40 Vdc or 20...28 Vac - Connectors 16 and 17, or by T-BUS connector (optional tool) on the base of the module.

POWER SUPPLY by T-BUS CONNECTION (T-BUS connector required):

it is possible to mount the accessory T-BUS to carry both power and serial communication. The number of modules supported by the function of the power supply bus is used (check the absorption of the modules).

INTERFACE PROGRAM FACILE QA-8DO

FACILE QA-8DO is the configuration software for QA-8DO module.
The software is free and downloadable from the website: www.qeed.it
To communicate with the module you have to connect via USB port directly on your PC.
It is possible to configure the module via RS485.

LEDS - FRONT SIGNALS:

Power: power presence on the device. **Fail:** presence of a failure/error on the device. It is activated in the case have been activated by FAIL messages on FACILE QA-8DO. One or more events FAIL are active.
Rx, Tx: the module is communicatingvia RS485 (LED blinking).
O1…O8: digital output active.

MOUNTING INSTRUCTIONS:

To mount the card on DIN rail, we recommend to place the top of the form on the edge of the bar omega, then pushing the bottom until it clicks. The module is equipped with a slider fastening that will be pushed forward in order to ensure the perfect fastening of the module on the bar.

NOTE: through the hole on the case of QA-8DO (shown in the figure), you can access an internal DIP SWITCH. Turning up the "DIP 1" you can activate the dynamic terminating of the Modbus.