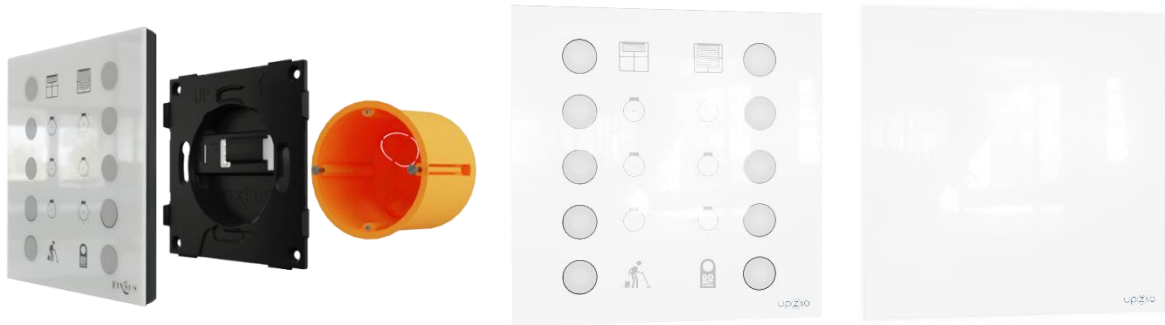


## UNIVERSAL SENSOR BASED TOUCH PANEL TP10 / ROOM ANALYZER



### Technical data

UPZIO\_0001\_TP10\_MODBUS\_IN

Glass Touch Panel with 10 touch buttons and 5 built-in sensors.

Communication via MODBUS RTU interface.

White LED indication/feedback for each touch button (dimnable)

RGB LED mode indication on glass plate (dimnable, 16 777 216 colors)

NFC (Near-Field Communication) for configuration and future applications.

#### Integrated sensors:

- Temperature sensor: -20...+120°C
- Temperature accuracy: +/-0.3°C (0-65°C)
- Relative humidity: 0...100% (+/-3%)
- VOC (air quality): 1...4095 PPB
- eCO2 (carbon dioxide): 400...4095 PPM
- Light: 0...16383 LUX

#### Touch system

The TP10 for Modbus has 10 touch buttons. These buttons have auto calibration at startup and continuous adaptive tracking/calibration during operation. Disabling/enabling the TP10\_Modbus via the Master control initiates a recalibration of the touch buttons. Each touch button can be disabled(masked) by register control. For a good functionality of the touch system in all situations, the controller or PLC must be connected to Earth. Sensitivity can be adjusted via a Modbus register. After each adjustment, the system is recalibrated. During this recalibration (10s), the buttons will not respond and should not be touched to prevent incorrect calibration.

#### Specifications:

- Required voltage supply: 12 / 24VDC, (0,1A max, 30mA typical)
- Visible dimensions: 87mm \* 87mm \* 6.7mm
- Usage temperature: 5...40°C
- Storage temperature: -10...85°C
- Relative humidity: < 90% (non-condensing)
- Protection rating: IP30 (indoor usage)

### Mounting

- Recessed depth: 16mm (in standard cavity wall mounting box or mounting box with screw fixing)
- Use countersunk screws to mount the device into the mounting box
- When making use of the integrated sensors it is advised to not place the device above or close to a heating system or places where draught is possible
- Install the device at a minimum distance of 20cm from electric cabling
- Metal plates should be earthed

### Wiring

- Cable entry through wall must be closed off to prevent false measurements through cavity air
- Wiring: 4 wires max 0.75mm, TP, (e.g. 0.75mm UTP)

Connection diagram



- 1, 5 = +24VDC or 12VDC
- 2,6 = GND
- 3,7 = Modbus A
- 4,8 = Modbus B

## MODBUS specification

This device uses MODBUS RTU.  
It uses RS-485 as physical interface.

The device has the following MODBUS specification:

DIPSWITCH mode:

- Device address 1-247
- Baudrate 9600 (default) / 19200
- Even or odd parity (1 stopbit)

NFC Mode\*: (ALL DIPSWITCHES to 0/OFF or 1/ON)

- Device address 1-247
- Baudrate 1200/2400/4800/9600/19200/28800/38400/57600/115200
- No parity (1-2 stopbit) / Odd parity (1 stopbit) / Even parity (1 stopbit)

MODBUS Messaging

This device uses Modbus RTU (Remote Terminal Unit)

\* future feature unlocked upon request

## MODBUS Registers

These are the available registers for the TP10 Modbus.

Reg Nr	Holding Register	Input register	coil	Discrete input
	16 bit in/out	16 bit input	boolean bit in/out	boolean bit input
0	--	--	--	--
1	Buttons	Buttons	button 1	button 1
2	Temperature*10	Temperature*10	button 2	button 2
3	CO2*10	CO2*10	button 3	button 3
4	VOC*10	VOC*10	button 4	button 4
5	LUX*10	LUX*10	button 5	button 5
6	Humidity*10	Humidity*10	button 6	button 6
7	dewpoint*10	dewpoint*10	button 7	button 7
8	led buttons	led buttons	button 8	button 8
9	mask buttons	mask buttons	button 9	button 9
10	RGB red( 0-255)	RGB red( 0-255)	button 10	button 10
11	RGB green( 0-255)	RGB green( 0-255)	led button 1	led button 1
12	RGB Blue( 0-255)	RGB Blue( 0-255)	led button 2	led button 2
13	Button count general	Button count general	led button 3	led button 3
14	Button count 1	Button count 1	led button 4	led button 4
15	Button count 2	Button count 2	led button 5	led button 5
16	Button count 3	Button count 3	led button 6	led button 6
17	Button count 4	Button count 4	led button 7	led button 7
18	Button count 5	Button count 5	led button 8	led button 8
19	Button count 6	Button count 6	led button 9	led button 9
20	Button count 7	Button count 7	led button 10	led button 10
21	Button count 8	Button count 8	mask button 1	mask button 1
22	Button count 9	Button count 9	mask button 2	mask button 2
23	Button count 10	Button count 10	mask button 3	mask button 3
24	button sound level (0-255)	button sound level (0-255)	mask button 4	mask button 4
25	button sensitivity (1-100)	button sensitivity (1-100)	mask button 5	mask button 5
26	button led intensity (0-255)	button led intensity (0-255)	mask button 6	mask button 6
27			mask button 7	mask button 7
28			mask button 8	mask button 8
29			mask button 9	mask button 9
30			mask button 10	mask button 10

1000	Device ID (major)	Device ID (major)		
1001	Device ID (minor)	Device ID (minor)		
1002	reset device (0-1)	reset device (0-1)	reset device	reset device
1003	Locate device (0-1)	Locate device (0-1)	Locate device	Locate device
1004	Voltage level *10	Voltage level *10		
1005	Version Hardware MSB	Version Hardware MSB		
1006	Version Hardware LSB	Version Hardware LSB		
1007	Version firmware MSB	Version firmware MSB		
1008	Version firmware LSB	Version firmware LSB		
1009	Version registers MSB	Version registers MSB		
1010	Version registers LSB	Version registers LSB		
1011	UniqueID[11-10]	UniqueID[11-10]		
1012	UniqueID[9-8]	UniqueID[9-8]		
1013	UniqueID[7-6]	UniqueID[7-6]		
1014	UniqueID[5-4]	UniqueID[5-4]		
1015	UniqueID[3-2]	UniqueID[3-2]		
1016	UniqueID[1-0]	UniqueID[1-0]		
1017	Error count	Error count		
1018	Error code	Error code		

## Notes

- For holding and input register 1: each bit equals to a button. Bit 0 = button 1, bit 1 = button 2, etc.
- Empty registers are pre-filled with zero. This allows multi-reads or writes for all registers.
- For registers with a boolean value, use the lower bit of the register to read out its state. This provides an easy way to read-out each button via the coils function. Alternatively, use the Holding register to read out all values.
- Buttons, LEDs and masks on register values, are read out for each bit. E.g. first bit of word = button 1, 2nd bit of word= button 2, etc.
- For negative values, the representation format is two's compliment. (marked in purple)
- Register/coil 0 is never used.

### General

- Button counters will increase with 1 for each button press.
- Button count general counter totalizes all button counters.
- A button counter will reset on overflow or after a restart of the device.