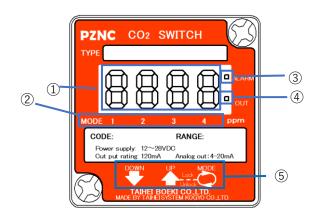


Operating Instructions

Contents

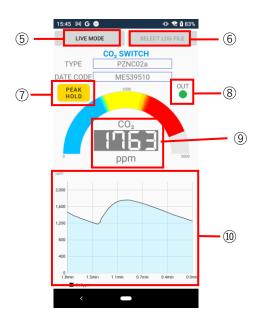
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(1) DESCRIPTION OF CO2 SWITCH AND APPLICATION INTERFACE



Main Body

Occupant Alarm LED
Occupant LED



(5) LIVE/LOG Mode Switching
 (6) Log Calling
 (7) Peak Hold

8 Output LED (Mode3)
 9 Concentration Indication
 10 Graphic Indication

(2) MODE INDICATION

Flashing Positions

Mode 0 8 8 8 Current CO2 Concentration (No Flashing)

Mode 1 8 8 Concentration alarm1

Mode 2 8 8 8 Concentration alarm2

Contact High Limit

Mode 4 8 8 8 Contact Low Limit

Each mode is obtained by clicking MODE button. The flashing positions, left picture, indicate each of the mode positions.

Save Energy Mode

Mode 3



X The indication light will be turned off with this mode.

(3) INSTRUCTIONS OF OPERATING METHODS AND INDICATIONS

- ①Apply power.
- ②LED display is turned on, and the display indicates the current concentration value on Mode 0. *After being applied the power, it takes 5sec for lighting on.
- ③ Setting up for concentration alarm (Mode1, 2)
 Press the MODE button. The display indicates Mode1, the concentration alarm value, with flashing.
 Press the UP-DOWN button to change the parameter of Mode1.
 When setting the parameter, press the MODE button to move on Mode2.
 Setting up for Mode2 is the same as above process.
- Setting up for contact high and low limit (Mode3, 4)
 Press the MODE button. The display indicates Mode 3, contact high limit, with flashing.
 Press the UP-Down button to change the parameter of Mode3.
 When setting the parameter, press the MODE button to move on Mode4.
 Setting up for Mode4 is the same as above process.
- ⑤Once setting up is done, please pressing the MODE button to be on mode 0 to store the parameters that you have set up. If you want to confirm or change the parameters, please switch the eligible mode by clicking the MODE button and change the parameters. Note: the parameters are not be stored in PZNC without reverting to Mode 0.
- ⑥By holding down the UP-DOWN button, it changes the numbers at fast rate. When the number is close to the target value, please release from the button. This is valid for reducing the time to configure parameters.
- ① Lock/Unlock
 While holding down the UP button at Mode0, pressing the MODE button to lock/unlock the switch.
- ®Save Energy Mode

Press the MODE button at Mode4, it turns to the save energy Mode. Even though the display light is turned off, the feature is still in working state.

Over indication

The range is defined for each type of CO2 switch. When the concentration value exceeds the MAX limit, the display indicates 0.00 0.0

*While you set up the parameters, the configurated output has been operated. When the risk is predicted, please shut down the system before proceeding.

(4) OUTPUT

Contact output: 1a(N.O) or 1b(N.C.) (relay output)

Xthe output display LED lights up when the concentration exceeds the upper limit setting value in either 1a and 1b cases.

Analog output: $4\sim$ 20mA

Recommended allowable load resistance: at 250 Ω , the voltage across is 1.0V - 5.0V.

(5) CONCENTRATION ALARM FLASHING INTERVAL

- When CO2 concentration is reached at concentration attention 1, the concentration indicator and alarm LED will flash at interval of 1 sec.
- When CO2 concentration is reached at concentration attention 2, the concentration indicator and alarm LED will flash at interval of 0.5 sec.

(6) PREPARING FOR CONNECTION TO PZNC APPLICATION

1. To connect Google Play, please read the QR code below by Android devices.



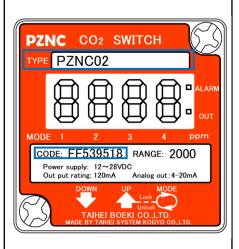
2. PZNC application will be on Google Play. Please press the **INSTALL** $(4 \vee 2 \vdash -1)$ tab.



3. The pop-up screen will be shown and press the **OPEN** (許可) tab after completing installation.



4.Apply the power of CO2 switch and confirm TYPE and CODE on the CO2 switch.



5. Open the Wi-Fi setting screen. Please choose SSID (TYPE+CODE), which is indicated on the CO2 switch.



6.Please input the password that is the CODE on CO2 switch.



7. Please check on the message below and press **YES** (はい) tab.



8. Please launch the Taihei Boeki PZNC application.



(7) OPERATING INSTRUCTIONS OF PZNC APPLICATION

①Press the LIVE MODE tab to switch log data indicator Mode.



④Press the button ⇔ and ⇒ to switch

the data back and forth.

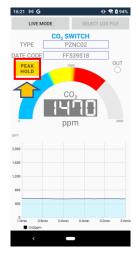


②Choose the SELECT LOG FILE tab to switch log Mode.

NOTE: data is graphical data only.



⑤ Press the button of "PEAK HOLD" to visible the highest concentration value. Repress the button of "PEAK HOLD" to be cleared.



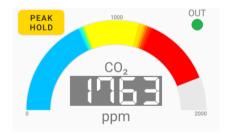
③ Pick the log file. The data is shown as graphical data.



©Concentration set on Mode1 and 2 is displayed in the bar graph.

Blue(normal value):0 \sim Mode1 configured value Yellow(concentration alarm1): Mode1 \sim Mode2 configured value

Red(concentration alarm2):Mode2 configured value \sim

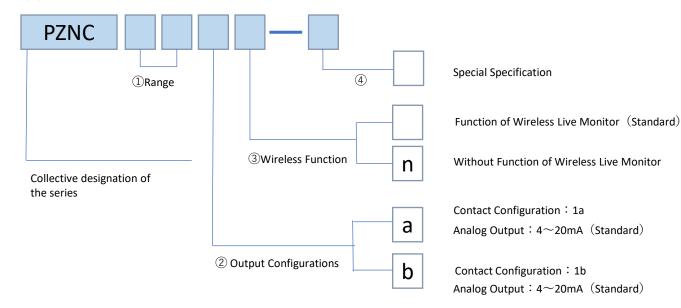


XThe bar graph indicates the intermediate color when the color is changed.

Other operating methods/Precautions

- Log files are saved in the storage as a CSV file. It is possible to import the data to PC and leave records. the place of the storage: Setup→storage→File→Android→data→pzn.co2monitor→files→Documents
- Log data is recorded around 7days (168 hours). The oldest data is deleted automatically in order.
- Log file is erased when application is uninstalled.
- Since the communication is wireless, depending on the conditions, the waveform of the graph might be interrupted in the middle.
- Please restart the application when there are issues of the display or operation of the application.
- Please switch the SSID each time if observing multiple CO2 switches with a smart device. Maximum number of connections at the same time is 4 devices for each CO2 switch.
- It is possible to observe the concentration change trend by the display of the graph on smart devices. However, it is unsuited to measure the data.
- It is possible to scall the display of the concentration value and time by swiping on the graph.

(8) MODEL SELECTION GUIDE



(9) Characteristic Concentration

ppm (%)

			(70)	
Туре	Range	Display Pattern	Concentration	
PZNC02	0~2000 (0~0.2)	8 8 8 8 OUT Mode 1 2 3 4 ppm	8 8 8 8 • ALARM OUT ppm	
PZNC05	0~5000 (0~0.5)	4 digit of Concentration Indication Mode Display	Flashing alarm LED and display by setting up the value on Mode1 and Mode2	
PZNC10	0~10000 (0~1)	Mode1:Flashing Mode2:Flashing Mode3:Flashihng Mode4:Flashing	Ex: Mode1: Set up on 1500ppm, 1sec interval flashing when it is over 1500. Mode2: Set up on 2000ppm, 0.5sec interval flashing when it is over 2000.	

Mode1: 1sec interval flashing value Mode2: 0.5sec interval flashing value

Mode3: Contact high limit Mode4: Contact low limit

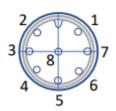
Cannot be set up the parameters of concentration by remote control.

 The concentration display of the smart devices is slightly behind from the display of CO2 switch. If you want to check the exact value, please check the device of CO2 switch.

• Special specifications can also be produced. Please contact us.

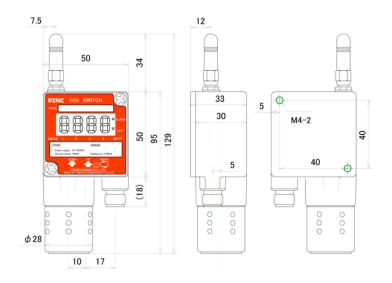
(10) ELECTRONICAL CONNECTION (M12 8P Connector)

PIN #	Cable Color	Usage		
2	White	+	Power Supply (DC12~24)	
7	Purple	_		
3	Blue	Relay Output (1a or 1b)		
1	Brown			
4	Black	+	Analog Current	
6	Peach	_	Output $(4\sim$ 20mA)	
5	Ash	no use		
8	Shield			

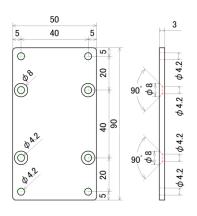


(11) DIMENSIONAL DRAWING

PZNC \square



*Option Mounting Plate



(12) SPECIFICATIONS

Supply Voltage : DC24V(DC12 \sim 28V) \times Be sure to use a regulated power supply.

Consumption current: Below 120mA

Output method : • Relay output 1a(N.O.) or 1b(N.C.)

(120mA AC or DC 200V peak MOSFET relay)

Analog current output 4-20 mA (recommended permissible residence below 250Ω)

Live monitor wireless method: Wi-Fi IEEE802.11g 2.4GHz

Wireless connection maximum distance: within 300m with the condition of open outlook

Measurement method : NDIR (Solid-state LED) Measurement accuracy : \pm (30ppm + 3% of reading)

Reproductivity: ± 10ppm

Temperature characteristics: 2.5ppm/°C

Reading response time : 0.8 sec Switch response time : below 1 msec

Operating condition : operating temperature $0\sim50^{\circ}\text{C}$

operating humidity 0~95%RH non-condensation and non-freezing

Operating barometric pressure: 500~2000hpa Calibration method: Full-Auto calibration

Durability: Sensor is more than 15 years. Switch mechanism is more than 10 million cycle.

Material of the housing: Die-cast Aluminum (alumite treatment)
Material of the sensor housing: Aluminum (A5052) (alumite treatment)

Electronical connection: M12 8P connector

Mass: 155g

XOptional mounting plate: Aluminum (alumite treatment) 20g

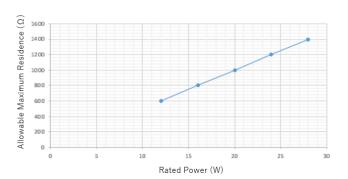
(13) IMPORTANT NOTICE

- Please carefully read this operating instructions before installing CO2 switch.
- Capability of CO2 sensor may be reduced by accumulation of polluted substances and degradation of optical components.
- To prevent from the case above, the sensor resets the fresh-air zero point as the lowest measurement of 480ppm for the first 1 day and then for 8 consecutive days with continuous drive. This function, called auto calibration (auto-zero function), is enabled by default.
- To function correctly, the sensor must be exposed to typical background levels (400-450ppm) at least once during the auto-zero period.
- When the CO2 switch is exposed to background where CO2 concentration is high, au-to calibration resets the zero point at higher measurement value, and this may provide cause of error in measurements.
- When the CO2 switch is turned off, the corrected data will be deleted and reset to pre-correction value.
- This CO2 switch is not intended for use in life support or systems where malfunction can reasonably be expected to result in personal injury, death or severe property or environmental damage.
- Please kindly understand that Taihei Boeki is not liable for any malfunctions above.
- Please be sure to turn off the power when attaching or detaching the connector.

4~20mA Termination Allowable Value

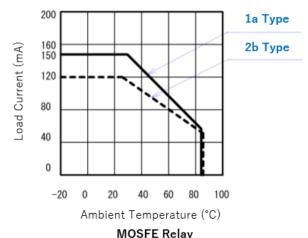
- 4-20mA system termination allowable value depends on supply power.
- To pass the maximum current 20mA, Rmax is bigger than supply voltage divided by 20mA.
- However, our recommendation is to use the terminators that are smaller than Rmax.
- Maximum current of 20mA cannot flow if the residence value is greater than Rmax.
- The current can flow if resistance is smaller. However, the voltage that can be detected is smaller. (Although it can flow 4-20mA 0f current if the terminator is 0Ω , the voltage that can be detected as 0V.)
- Caring the rated power of resistance value should be taken.

Supply Voltage (DC)	Allowable maximum resistance (Ω)	Rated (1	Power N)
12	600	0.24	1/2W
16	800	0.32	1/2W
20	1000	0.4	1/2W
24	1200	0.48	1W
28	1400	0.56	1W



MOSFET Relay

The graph below shows the characteristics of load current and ambient temperature. Please use CO2 Switch in the range of graph.



Load Current : Ambient Temperature

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