Honeywell

C7110C1001/D1009

WALL MODULES

HONEYWELL EXCEL 5000 OPEN SYSTEM

SPECIFICATION DATA

GENERAL

The C7110C and C7110D are combined CO_2 / temperature wall modules designed for applications in indoor ventilation and air conditioning systems. In conjunction with Honeywell's Excel 5000 controllers, they can be used to control the flow of incoming fresh air, thus improving air quality while reducing energy consumption. During high-occupancy periods, fresh air can be supplied to rooms in order to maintain acceptable air quality, while during low-occupancy periods, the unnecessary conditioning of outdoor air can be avoided or reduced.

FEATURES

- **CO_2 sensor employing state-of-the-art Non-Dispersion Infrared (NDIR) technology.**
- **CO_2 measurement range of 0…2000/3000 ppm.**
- **Self-calibrating: automatic drift correction (ABC algorithm) based on long-term evaluation.**

MODELS

order no.	description
C7110C1001	• 0…10 Vdc CO_2 sensor output • 0…10 Vdc temperature output • LED indicating CO_2 level
C7110D1009	• 0…10 Vdc CO_2 sensor output • NTC20kΩ temp. sensor (passive) • Temp. setpoint wheel (rel./abs. scale) • occupancy bypass button • LED indicating occupancy

ACCESSORIES

order no.	description
T7460LIMITER	Limiter for the temperature setpoint wheel
T7460LONJACK	LONWORKS or BACnet access module (5-pc. set)

DIMENSIONS

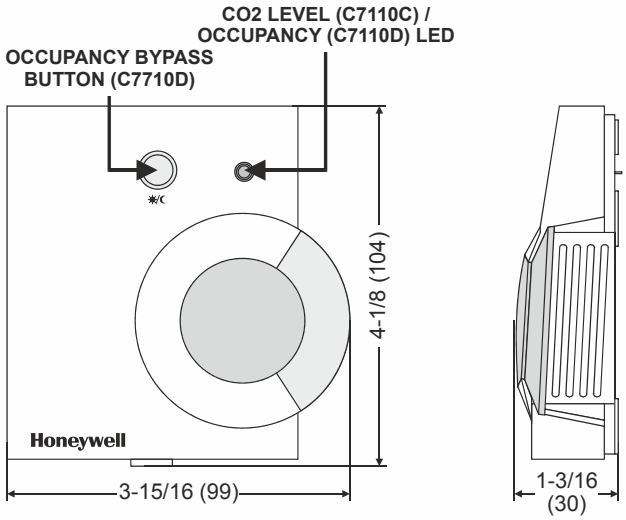

Fig. 1. Dimensions in inches (mm)

TECHNICAL DATA

General

Power supply (pins 1+3)	24 Vac ± 20%; 50/60 Hz or 17…40 Vdc; 1.5 VA
Power-up time	≤ 60 sec (incl. self-diagnostics)
Ambient operating limits	0…50 °C, 0…95% rh, non-condensing
Storage limits	-40…+70 °C
Sensor life expectancy	> 15 years, maintenance-free
Protection class	IP20 as per EN 60529

CO2 Measurement

Range	0…2000 ppm or (jumper position "0") 0…3000 ppm
Output (pins 1-2)	0…10 Vdc for max. 2 mA
Accuracy	factory-calibration ±50 ppm or ±5% of measurement range
Pressure dependence	+1.6% per kPa deviation from normal pressure of 100 kPa
Response time	90% penetration within 1 min
LED (C7110C, only)	green when < 1000 ppm, yellow when > 1000 ppm

Active Temperature Sensing (C7110C)

Range	0…50 °C
Output (pins 1+4)	0…10 Vdc for max. 2 mA
Accuracy	±0.5 K at 15…30 °C

Passive Temperature Sensing (C7110D)

Sensor (pins 1+4)	Thermistor NTC20kΩ at 25 °C
Accuracy	±0.5 K at 20…25 °C

Occupancy Feature (C7110D)

Setpoint potentiometer	relative: -5 K … +5 K absolute: 12 °C … 30 °C
Occupancy bypass	pushbutton
LED	ON > 2 V, OFF < 2 V

MOUNTING

⚠ WARNING

Risk of electric shock or equipment damage!

- ► Do not touch any live parts.
- ► Disconnect power supply before making connections.
- ► Do not reconnect power until installation is complete.
- ► Observe precautions for handling electrostatic sensitive devices.

1. Remove the cover (see Fig. 2).
2. Mount the socket onto the wall approx. 1.5 meters above the floor.
3. Connect the wires to the terminals. Do not connect the power supply until all connections and settings have been correctly completed.
4. Make sure that the setpoint wheel is inserted with the scale range symmetrical (C7110D). A relative scale (±5 K) or absolute scale (12…30 °C) are available.
5. Remount the cover.

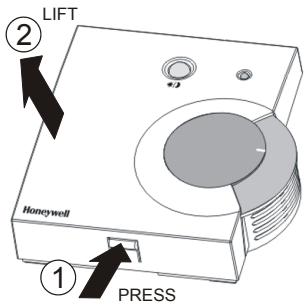

Fig. 2. Removing the cover

T7460-LONJACK

The T7460-LONJACK (ordered separately) is a small board with a 3.5 mm jack. When mounted to the Printed Circuit Board (see Fig. 3), it provides easy access to LONWORKS / BACnet (the wall module must be already connected to the LONWORKS / BACnet network via a bus cable, in compliance with the max. cable lengths set forth by the LONWORKS / BACnet Guidelines).

Order quantity: set of 5 pieces

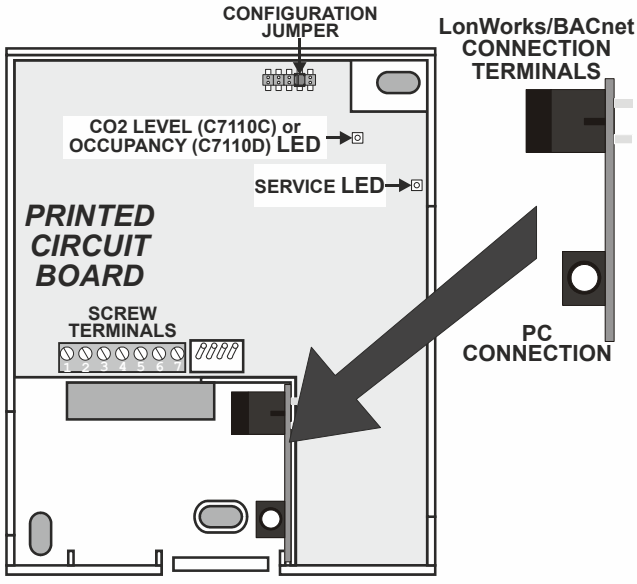

Fig. 3. Mounting the T7460-LONJACK

Wiring

The screw terminals, located on the Printed Circuit Board (see Fig. 3), are suitable for connecting 0.3 to 1.5 mm^2 (16…22 AWG) wiring. The terminals assignment of pins 1 through 7 for both models is depicted in Fig. 4.

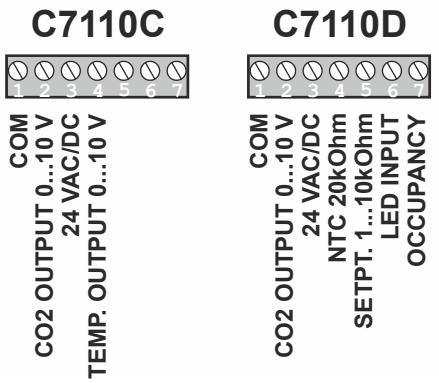

Fig. 4. Terminal assignment (C7110C, C7110D)

Configuration Jumper

The wall module can be calibrated manually and the CO_2 measuring range extended by repositioning the configuration jumper located on the Printed Circuit Board (see Fig. 3). There are five possible configuration jumper positions (see Fig. 5).

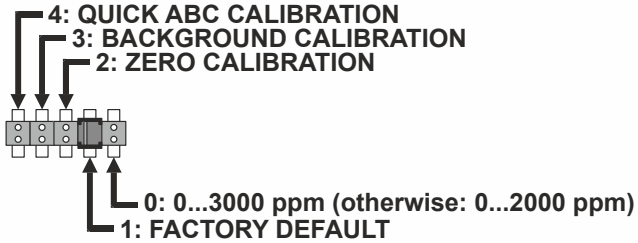

Fig. 5. Configuration jumper positions

NOTE: Do not change the jumper position while power is ON.

In a normal environment, the C7110 is maintenance-free. Accurate measurement is guaranteed by the built-in ABC self-calibration feature (see below).

ABC Calibration (Automatic Baseline Calibration)

If the jumper is not in positions 2, 3, or 4, any initial (due, e.g., to rough handling during shipping) or possible long-term drift is gradually (i.e. by a max. of 30 ppm per week) corrected by comparing the lowest measured value (over the last 7.5 days) with the expected fresh air level of 400 ppm.

Not Connected (Position 1)

When the jumper is set to position 1 (the factory default), it is not connected. The wall module will then revert to normal operation with ABC operation.

Quick Calibration

In the event that one cannot wait for the gradual ABC Calibration to correct measurement errors, it is possible to make use of the following three quick calibration methods.

Quick ABC Calibration (Position 4)

When the jumper is set to position 4 for at least 8 seconds, Quick ABC Calibration is carried out. The lowest value measured over the coming 24 hours is then set to approx. 250 ppm in a single step. The wall module will then revert to normal operation with ABC operation.

Background Calibration (Position 3)

When the jumper is set to position 3 for at least 8 seconds, a fast Background Calibration is carried out. The current level is then set to 400 ppm (= normal expected actual fresh air level) in a single step.

Zero Calibration (Position 2)

When the jumper is set to position 2 for at least 8 seconds, Zero Calibration is carried out. This is done while testing the wall module with CO_2-free air (e.g., a pure nitrogen atmosphere or air purified of CO_2 using Milk of Lime).

Expanding CO2 Measuring Range (Position 0)

When the jumper is set to position 0, the CO_2 measuring range is expanded to 0…3000 ppm. Otherwise, the range is 0…2000 ppm.

Self-Diagnostics (Service LED)

Turning the power ON automatically starts a 2-second system test. During operation, a check for measurement failure will also be routinely performed.

The yellow service LED located on the Printed Circuit Board (see Fig. 3), and visible after the cover has been removed (see Fig. 2), illuminates during the warm-up phase and also whenever a failure is detected.

Except for “out-of-range” failures, the service LED can be reset by turning the power OFF and then ON again, thus returning the wall module to its normal state.

Temperature Sensor (C7110D)

Table 1. Temperature sensor accuracy

ambient temperature	nominal resistance (Ω)
15.5 °C (60 °F)	31543
18.3 °C (65 °F)	27511
21.1 °C (70 °F)	24047
26.7 °C (80 °F)	18490
29.5 °C (85 °F)	16264

Electronic offset compensation at 23 °C = 1.2 K.

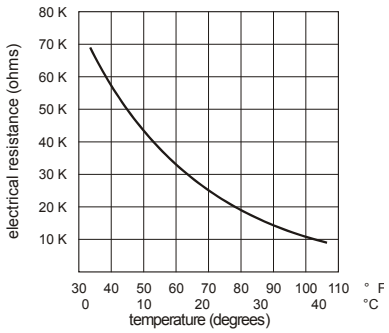

Fig. 6. Temperature vs. resistance for 20 kΩ sensor

Temperature Setpoint Adjustment (C7110D)

Depending on the type of dial in use on the C7110D, the corresponding controller must be set for either the relative or the absolute scale. The relation between setpoint and resistance is given in Table 2. Accuracy of resistance is:

- ±5% in middle position, e.g., 5225 Ω to 5775 Ω
- ±10% in end position, e.g., 9450 Ω to 11550 Ω.

Table 2. Setpoint values versus resistances

relative scale (Kelvin)		absolute scale (°C)	
setpoint	**nominal resistance (Ω)**	**setpoint**	**nominal resistance (Ω)**
-5	9574	12	9958
-4	8759	14	8979
-3	7944	16	8001
-2	7130	18	7022
-1	6315	20	6043
0	5500	22	5065
1	4685	24	4086
2	3870	26	3107
3	3056	28	2129
4	2241	30	1150
5	1426		

Occupancy Bypass Button and Occupancy LED (C7110D)

The functionality of the occupancy bypass button and the occupancy LED of the C7110D (see Fig. 2) is dependent upon the connected controller. Please refer to the corresponding technical literature and/or controller application.

LED as Override LED (C7110D)

When the override LED can display the following behaviors:

- LED OFF = “no override”
- LED ON = “override bypass”
- LED flashing once per sec = “override unoccupied”
- LED flashing twice per sec = “override standby” or “occupied”
- LED flashing four times per sec = wall module receiving wink commands from controller

LED as Occupancy LED (C7110D)

The occupancy LED can display the following behaviors:

- LED OFF = “effective unoccupied”
- LED ON = “effective occupied” or “bypass”
- LED flashing once per sec = “effective standby”
- LED flashing four times per sec = wall module receiving wink commands from controller

Honeywell

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