T7560A,B,C Digital Wall Module

HONEYWELL EXCEL 5000 OPEN SYSTEM

FEATURES

- **Fully compatible with all current Excel 10 and Excel 20 to 600 controllers.**

- **Low power consumption.**

- **Integral 20kΩ NTC sensor.**

- **Separate mounting base for easy installation.**

- **Tamper-resistant locking cover.**

- **IP30 housing.**

- **T7560A and B, only:**

    - **LCD display continuously shows current space temperature, occupied/unoccupied/standby mode, fan status/mode, humidity, as configured.**

    - **Push-button interface for full navigation and change control of wall module functions.**

    - **Single-touch occupied/unoccupied override.**

    - **Setpoint dial for setpoint adjustment.**

    - **Fan Speed/Mode commandable from buttons.**

    - **Selectable °F/°C temperature display.**

    - **Selectable setpoint type, absolute or relative.**

GENERAL

The T7560A,B Digital Wall Modules (DWM) display and provide space temperature, setpoint, Occupied/Unoccupied override, and fan mode/speed selection for the Honeywell Excel 10 W7750, W7751, W7752, W7753, W7761, W7762, W7763, and Excel 600, 500, 100, 50, 20 Controllers, as applicable (a software module ModAL is available to adapt the wall module to the respective Excel 20, 50, 100, 500, 600 controller. See T7560A,B,C Installation Instructions (product literature no.: EN1B-0146GE51) for details.

Using the three buttons, the user can change room temperature setpoint, fan mode/speed, initiate/cancel bypass, and change configuration information such as the DWM's engineering units.

The T7560C Digital Wall Module (see inset above) has no user interface (e.g. LCD, buttons, or setpoint dial) and issues only temperature and humidity values.

These wall modules are not compatible with Honeywell W7751A,C,E,G (VAV1) and W7752D1 (FCU1) Controllers.

CE

SPECIFICATIONS

Models

Table 1. Types of DWM

	sensor[1]	colors (dial / housing)	pre-conf. units
T7560A1000	Tmp	blue/white	°C
T7560A1026	Tmp	white/white	°C
T7560A1018	Tmp	white/white	°F
T7560B1008	Tmp/Hum	blue/white	°C
T7560B1024	Tmp/Hum	white/white	°C
T7560B1016	Tmp/Hum	white/white	°F
T7560C1006	Tmp/Hum	blue/white	n.a.

[1] Tmp = Temperature sensor; Hum = Humidity sensor

Temperature Sensor Accuracy

The DWM is furnished with a 20kΩ NTC temperature sensor that follows a specific temperature-resistance curve. See Fig. 1. Honeywell controllers used with the DWM employ an algorithm that provides readings close to the actual temperature. Table 2 summarizes the DWM sensor accuracy for normal operating temperatures. Across the range of 43 to 104°F (6 to 40°C), the accuracy is better than ±0.75°F (±0.42°C).
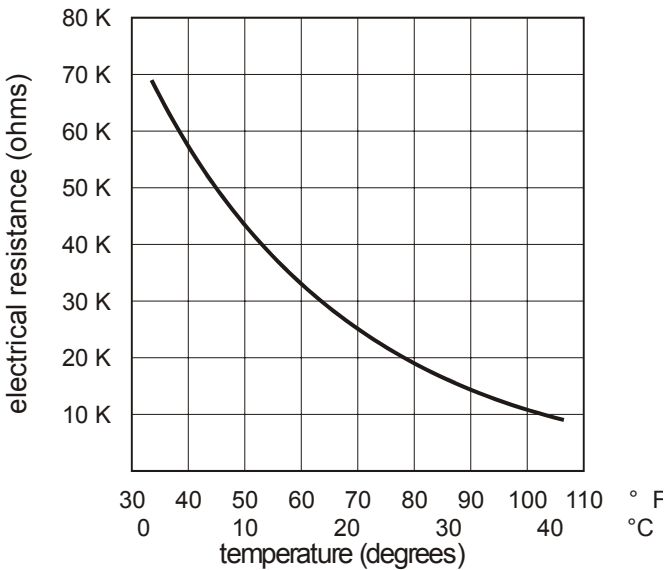

Fig. 1. Temperature vs. resistance for 20kΩ sensor

Table 2. Temperature sensor accuracy

ambient tem. (°C)	max. error (°C)	nominal re-sistance (Ω)
15.5	±0.29	31543
18.3	±0.27	27511
21.1	±0.27	24047
26.7	±0.27	18490
29.5	±0.29	16264

Humidity Sensor

Table 3. Humidity sensor specifications

parameter	value
humidity sensing range	20…95% r.h.
output signal	2…10 Vdc (20…100% r.h.)
accuracy	±10% (full-scale)

Fan Speed Button (T7560A,B, only)

Table 4. Fan speed resistances

switch position	resistance (Ω)	fan behavior
auto	1861.4 ±100	runs as scheduled
0	2686.4 ±100	OFF
1	3866.4 ±100	runs at speed 1
2	3041.4 ±100	runs at speed 2
3	4601.4 ±100	runs at speed 3
bypass activated	0...100	unchanged

NOTE: If connected to Excel 10 UV Controller W7753, fan output will not be shorted to ground on pressing the BYPASS button; with every other Excel 10 Controller, it will be shorted.
See T7560A,B,C Installation Instructions (product literature no.: EN1B-0146GE51) for configuration.

Power Supply

24 Vac/dc with a valid range of 18...30 V
5 Vdc via LED input with a valid range of 5...12 V
See T7560A,B,C Installation Instructions (product literature no.: EN1B-0146GE51) for details.

Power Consumption

<2 VA at 24 Vac, 50/60 Hz

DWM Setpoint Adjustment

The relation between setpoint and resistance is given in Table 5 and Table 6. 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 5. Setpoint values vs. resistances (Celsius)

setpoint rel./K	nom. res. (Ω)	setpoint abs./°C	nom. res. (Ω)
-5	9574.0	12	9958.0
-4	8759.2	13	9468.7
-3	7944.4	14	8979.3
-2	7129.6	15	8490.0
-1	6314.8	16	8000.7
0	5500.0	17	7511.3
1	4685.2	18	7022.0
2	3870.4	19	6532.7
3	3055.6	20	6043.3
4	2240.8	21	5554.0
5	1426.0	22	5064.7
		23	4575.3
		24	4086.0
		25	3596.7
		26	3107.3
		27	2618.0
		28	2128.7
		29	1639.3
		30	1150.0

Table 6. Setpoint values vs. resistances (Fahrenheit)

setpoint rel./K	nom. res. (Ω)	setpoint abs./°C	nom. res. (Ω)
-10	10026.7	55	9577.4
-9	9574.0	57	9033.7
-8	9121.3	59	8490.0
-7	8668.7	61	7946.3
-6	8263.7	63	7402.6
-5	7763.3	65	6858.9
-4	7310.7	67	6315.2
-3	6858.0	69	5771.5
-2	6405.3	70	5499.6
-1	5952.7	71	5227.8
0	5500.0	73	4684.1
1	5047.3	75	4140.4
2	4594.7	77	3596.7
3	4142.0	79	3053.0
4	3689.3	81	2509.3
5	3236.7	83	1965.6
6	2784.0	85	1421.9
7	2331.3		
8	1878.7		
9	1426.0		
10	973.3		

Field Wiring

- 16 to 22 AWG (1.5 to 0.34 mm^2) depending on application.
- 18 AWG (1.0 mm^2) min. for 24 Vac power wiring.
- Max. length of wire from a device to a wall module is 164 ft (50 m).
- Twisted pair wire recommended for wire runs longer than 100 ft (30.5 m).

Setpoint Adjustment Range (A and B)

Setpoint can be configured for
- Fahrenheit absolute (55...85 °F)
- Fahrenheit relative (± 10)
- Celsius absolute (12...30 °C)
- Celsius relative (± 5)

Temperature Value Display Resolution (A and B)

Degree Celsius ⇒ 0.1 °C
Degree Fahrenheit ⇒ 0.1 °F

Setpoint Value Display Resolution (A and B)

Degree Celsius ⇒ 0.5 °C
Degree Fahrenheit ⇒ 1.0 °F

Mounting Options

Wall mounting

Dimensions(H/W/D)

4-1/8 x 3-15/16 x 1-3/16 in. (104 x 99 x 30 mm)

Environmental Ratings

Shipping temperature: -40...+140 °F (-40...60 °C)
Operating temperature: 32...104 °F (0...+40 °C)
Relative humidity: 20% to 90% non-condensing

Approval Bodies

UL 916, NEC Class 2
CE

OPERATION OF THE DWM

Table 7. Supported DWM functions with Excel 10 Controllers

	bypass	unit enable	fan override	setpoint	humidity	room temp.
W7750 CVAHU	✓	N/A	N/A	✓	✓	✓
W7751 VAV	✓	N/A	N/A	✓	N/A	✓
W7752 FCU	✓	✓	✓	✓	N/A	✓
W7753 UV	✓	✓	✓	✓	✓	✓
W7761 RIO	N/A	N/A	N/A	N/A	✓	✓
W7762 HYD	✓	N/A	N/A	✓	N/A	✓
W7763 CHC	✓	N/A	N/A	✓	✓	✓

General

The T7560A and T7560B feature three buttons, a setpoint dial, and the LCD display (see Fig. 2). This section describes the functions of these elements. Table 7 shows the functions available with the different Excel 10 Controllers.
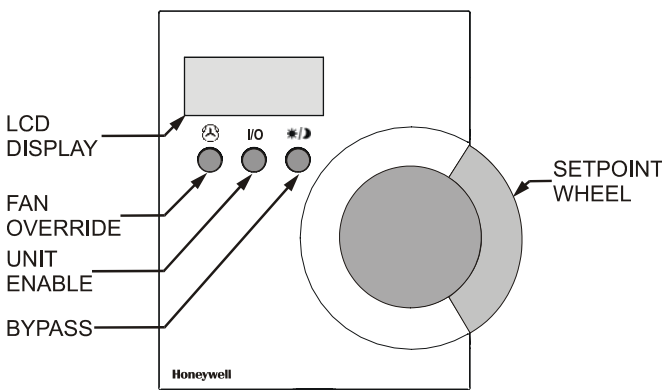
Fig. 2. Control elements of DWM.

NOTE: If not specified differently, the graphics given below show example display settings; depending on configuration, the actual indications may vary from those shown hereinafter.

Set Temperature

Depending on the configuration, you can adjust the temperature within the limits given below:
- °C absolute ⇒ 12 to 30°C (in 0.5 steps)
- °C relative ⇒ -5 to +5 (in 0.5 steps)
- °F absolute ⇒ 55 to 85°F (in 1.0 steps)
- °F relative ⇒ -10 to +10 (in 1.0 steps)

Turn the SETPOINT DIAL up/down to decrease/increase the room temperature setpoint. The display toggles the setpoint value (either relative or absolute, as configured).
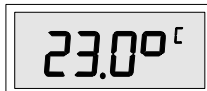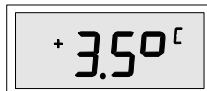
After the new setpoint has been set, the display returns to normal mode after approx. 5 sec.
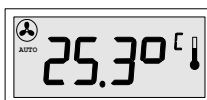
Set Fan Speed

The manually set fan speed is represented by a bargraph. Depending on configuration, the fan speed can be set as follows:
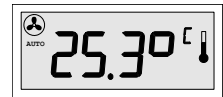- Three-speed fan override ⇒ AUTO, OFF, 1, 2, 3
- Two-speed fan override ⇒ AUTO, OFF, 1, 2
- Fan mode override ⇒ AUTO, OFF, ON

NOTE: The default setting after power-up is AUTO. The manually set fan speed overrides the controller's control algorithm.
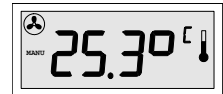
Three-speed fan override

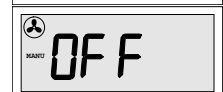Press the FAN OVERRIDE button to toggle between:
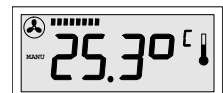
AUTO
(fan speed from controller)

MANU OFF
(fan off)

With this setting, depending on configuration, the display may also read:

MANU 1
(fan speed 1)

MANU 2
(fan speed 2)

MANU3
(fan speed 3)

Two-speed fan override

Press the FAN OVERRIDE button to toggle between:
AUTO (fan speed from controller; display: see above)
MANU OFF (fan off; display: see above)
MANU 1 (fan speed 1; display: half bargraph)
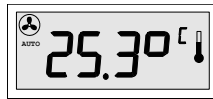MANU 2 (fan speed 2; display: full bargraph)

Fan mode override

Press the FAN OVERRIDE button to toggle between:
AUTO (fan speed from controller; display: see above)
MANU OFF (fan off; display: see above)
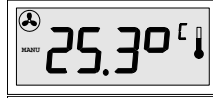MANU ON (fan on; display: full bargraph)

Set Fan Mode

The UNIT ENABLE button switches the fan mode between AUTO and MANU OFF:

AUTO
(fan speed from controller)

MANU OFF
(fan off)

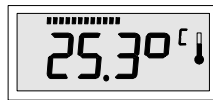   With this setting, depending on configuration, the display may also read:

Humidity Display

If applicable, the humidity is indicated by the bargraph at the top of the LCD. Each segment of the bargraph represents 4% of relative humidity:

NOTE: Humidity display is not available with fan control.

Humidity mode
(e.g. left 12 segments ON = 50% relative humidity)

Set Bypass/Occupancy Mode Display

The bypass function can be used to override the control algorithm generated by the controller (e.g. for an event after normal office hours, or for a room known to be unused). The status of the occupancy mode can be seen from the sun, moon, and snowflake symbols. The following LCD behaviors are possible, depending on configuration. See T7560A,B,C Installation Instructions (product literature no.: EN1B-0146GE51) for configuration options:

Occupancy mode display for Excel 10 LCD signaling (Excel 10 set to LCD_DISPLAY; with FCU, HYD, and CHC, only.)

Effective Occupancy or Bypass mode
(SUN continuously ON)

Effective Standby mode; generated by time program
(HALF-SUN continuously ON)

Effective Unoccupancy mode
(MOON continuously ON)

Unit Off, No Frost Protection
(OFF without snowflake)

Unit Off, With Frost Protection
(OFF WITH SNOWFLAKE)

Override Standby mode (from central)
(HALF-SUN FLASHING)

Wink mode (NEURON[©] ID sent)
(SUN/MOON/SNOWFL. FLASHING)
(Only with FCU, HYD, CHC)

Press the BYPASS button to set the desired mode:

- *To activate Override Occupancy or Bypass mode, press and release the BYPASS button.*
- *To activate Override Unoccupancy mode, press and hold the BYPASS button for at least 5 sec.*
- *To return to normal mode, press and release the BYPASS button again.*

NOTE: Pressing the BYPASS button for more than 5 seconds sends the NEURON[©] ID of the connected Excel 10 controller via the LonWorks[©] network.

Override Occupancy or Bypass mode
(SUN FLASHING)

Override Unoccupancy mode
(MOON FLASHING)

Override mode display for Excel 10 LED signaling (Excel 10 set to LED_OVERRIDE)

Off Conditions, No Override, Overr. Occupancy, Overr. Standby (NO SYMBOLS)

Wink mode (NEURON[©] ID sent)
(SUN/MOON/SNOWFL. FLASHING)
(Only with FCU, HYD, CHC)

Press the BYPASS button to set the desired mode:

- To activate Override Bypass mode, press and release the BYPASS button.
- To activate Override Unoccupancy mode, press and hold BYPASS button for at least 5 sec.
- To return to normal mode, press and release the BYPASS button again.

NOTE: Pressing the BYPASS button for more than 5 seconds sends the NEURON[©] ID of the connected Excel 10 controller via the LonWorks[©] network.

Override Bypass mode
(SUN FLASHING)

        EN0B-0237GE51 R1105

Override Unoccupancy mode
(MOON FLASHING)

*Occupancy mode display for Excel 10 LED
signaling (Excel 10 set to LED_OCCUPANCY)*

Effective Bypass mode
(SUN continuously ON)

Effective Standby mode; generated by
time program
(HALF-SUN continuously ON)

Off Conditions, Effective Unoccupancy
mode
(MOON continuously ON)

Wink mode (NEURON© ID sent)
(SUN/MOON/SNOWFL. FLASHING)
(Only with FCU, HYD, CHC)

Occupancy mode display for Excel 20 to 600

Display of the currently active Excel 20 to 600 mode; further
options depend on the configuration of the controller:

Occupancy mode
(SUN continuously ON)

Standby mode; generated by time
program
(HALF-SUN continuously ON)

Unoccupancy mode
(MOON continuously ON)

To adapt the T7560 to the CARE control strategies for Excel
20 to 600, a standard ModAL software module is available.
Contact your local Honeywell distributor, or refer to
T7560A,B,C Installation Instructions (product literature no.:
EN1B-0146GE51) for further details.

ACCESSORIES

For mounting the following accessories, please refer to the
T7560A,B,C Installation Instructions (product literature no.:
EN1B-0146GE51).

T7460-LONJACK

The T7460-LONJACK is a small board and allows easy
access to LONWORKS via the wall module (the wall module
must be already connected, in compliance with the max.
cable lengths set forth by the LONWORKS Guidelines, to the
LONWORKS network via a LONWORKS bus cable). Via an
additional 3.5 mm jack plug on the board, a PC connection
can be established.

Order quantity: set of 5 pieces

T7560 Blinds

Same material and color as housing; for covering non-
operational buttons.
Order quantity: set of 50 pieces.

Honeywell