

Split Controller Noise-Free Controlling Application

Noise-Free climate controller for fan coil applications

Product Reference No.:HTW-61-EW001-B

HTW-61-EW001-B is a Noise-Free room climate controller application for waterinstallations with fan coils. It is designed as a stand-alone device to operate the fan coil unit of a zone and includes a set of functions for zone occupancy and window position based climate control. A high level of comfort and appropriate climate control to ensure maximum energy savings are thus provided.

The device is a compact unit that includes a large backlit display screen, a built in temperature sensor, pushbuttons on the front panel, and inputs and outputs built on split remote relay module for room control.

This split thermostat application includes two parts:

1).Manual operation display part: HTW-61-EW001-B

2).Remote relay module part: HTW-61-EW001-RM

These two parts are communicated via 4-wire connections:

- GND
- 12V
- TXD
- RXD

It provides a totally Noise-Free application due to its remoted relay module.

Instruction Data Sheet



HTW-61-EW001-B



HTW-61-EW001-RM

General features

- Wide, blue backlit LCD, 65 × 59 (mm)
- Front panel built in pushbuttons: Mode/+T/-T/Fan speed/On-Off
- Front panel built in temperature sensor
- Two models available: 4 or 5 pushbuttons (HEAT/COOL)
- Configurable for 2 pipe / 4 pipe systems
- Selectable temperature units (°C/°F)
- Configurable max/min/economy temperature setpoints
- Keycard switch contact occupancy monitoring for energy saving
- Configurable anti-humidity frequency:10/30,5/30,5/60
- Configurable keycard switch input: keycard switch/lighting
- Configurable fan coil: 3 speeds / 1 speed
- Speed 1 configurable as blocked or unblocked on zero demand
- Economy mode Heat/Cool temperature setpoint Heat/Cool dead band
- Delayed switching to Economy when card is removed
- Automatic device startup after loss of power
- Configurable NO/NC valve outputs
- Noise-Free application

Device Inputs and Outputs

Inputs:

- 1 Digital, keycard switch contact / lighting auxiliary contact
- 1 Digital, window contact
- 1 Analog, ambient temperature external sensor
- 1 Temperature sensor, built in on device front panel

Outputs:

- 3 Relays, fan coil speed (I,II,III)
- 1 Relay, chilled water valve
- 1 Auxiliary relay (hot water valve on 4 pipe systems / lighting on 2 pipe systems)
- 1 Auxiliary relay for lamp

Product description

The split controller Noise-Free application is designed for room climate control at hotels, offices and homes with water and fan coil installations. The device includes all the necessary inputs and outputs to operate a 2 pipe or a 4 pipe system; control over one or two on/off valves and a 3 speed fan coil is provided to maintain room or zone temperature to user requirements.

The device includes a built in temperature sensor on its front panel for room temperature measurement, and features an advanced control algorithm for fan coil speed and valve position control. Two digital inputs are also provided, one to detect zone occupancy from a keycard switch contact-used in hotels to indicate that the room is occupied,

and another one to connect to a window contact-used to temporarily disconnect operation when the window is open. The keycard switch input may alternatively be configured to control zone lighting on 2 pipe systems. In this case, one of the valve outputs converts to lighting control output.

The device includes a simple configuration menu that allows configuring up to 28 parameters. The unit can thus be adapted to the requirements of each installation.

More importantly, the device is designed with a remote relay module, in order to provide a totally Noise-Free application.

Configuration Parameters

Special Note :

- 1).During power-off status, push and hold "Fan" and "+" buttons together for 6s to entry the configuration parameter setting;
 2).There are two lighting output.
 lighting 1:when P10 configured as 2P, the Aux is working as a courtesy lighting;
 Lighting 2: Lamp output(terminals 14-15) associated with window contact input.

Parameter	Description	Possible values	Default values	Setting display
1	Displaying temperature in °C or °F	°C or °F	°C	C/F
2	Fan-coil speed(1 speed,3speeds)	1/3	3	1/3
3	1 fan-coilspeed active when there's no demand in cooling mode	NO/YES	YES	NO/YES
4	1 fan-coilspeed active when there's no demand in heating mode	NO/YES	NO	NO/YES
5	OFF or ECO or Anti-humidity mode when key-card is removed -Note 1	OFF/ECO/ANTI	ECO	OFF/ECO/ANTI
6	Time to change to OFF or ECO or Anti-humidity mode	1-250s	20s	1-250S
7	Change mode COOLING/HEATING as per water temperature entry -Note 2 & Note 3	NO/YES	NO	NO/YES
8	Change mode COOLING/HEATING as per set-point/temperature difference	NO/YES	NO	NO/YES
9	Displaying value(set-point/room temperature/set-point&temp.) -Note 4	SET/TEP/SET&TEP	SET	SET/TEP/ALL
10	Installation type (2piles/4pipes)	2P/4P	2P	2P/4P
11	Key-card input system working mode(Card/Auxiliary lighting)	CA/LI	CA	CA/LI
12	Contact type for key-card input setted up as auxiliary lighting(Push/Switch)	PSH/STH	PSH	PSH/STH
13	Dead-band temperature between cool/heat	+1°C~+6.0°C	3°C	+1°C~+6.0°C
14	Offset temperature	-3.0°C~+3.0°C	0.0°C	-3.0°C~+3.0°C
15	Configurable set-point maximum temperature	+22.0°C~+32.0°C	32.0°C	+22.0°C~+32.0°C
16	Configurable set-point minimum temperature	+15.0°C~+21.0°C	15.0°C	+15.0°C~+21.0°C
17	Set-point temperature in cool and occupied mode	+15.0°C~+32.0°C	23.0°C	+15.0°C~+32.0°C
18	Set-point temperature in cool and ECO mode	+15.0°C~+32.0°C	26.0°C	+15.0°C~+32.0°C
19	Set-point temperature in heat and occupied mode	+15.0°C~+32.0°C	21.0°C	+15.0°C~+32.0°C
20	Set-point temperature in heat and ECO mode	+15.0°C~+32.0°C	16.0°C	+15.0°C~+32.0°C
21	Equipment start-up after reset(OFF/ON)- Note 5	OFF/ON	ON	OFF/ON
22	Equipment start-up internal mode(COOL/HEAT)	CO/HE	CO	CO/HE
23	Closed electro-valves output control status	NO/NC	NO	NO/NC
24	Active lighting time(aux) from key-card detection- Note 6	0-250s	20s	0-250S
25	Default value for all parameters	NO/YES	NO	NO/YES
26	Modbus address setting (ID)	1~255	1	1~255
27	Window contact input working algorithm : 1) .when window contact open, valve outputs stop, fan speed stops 2) .when window contact open, valve outputs stop, but fan speed switches to slow; 3) .this contact is associated with LAMP output: a. when window contact closed, Lamp on ; b. when window contact open, Lamp off	1/2/3	1	1/2/3
28	Delay time to switch after window contact open	1-250s	20s	1-250s
29	The frequency of Anti-humidity: 1).10mins every 30mins; 2). 5mins every 30mins; 3). 5mins every 60 mins	1/2/3	2	1/2/3
30	Time delay for Auto-Speed switch: 1). 1---1 min delay; 2). 3---3 min delay; 3). 5---5 min delay	1/3/5	1	1/3/5

Notes

1)	Anti-humidity algorithm : when the key card pulled out, the device automatically switch to work at set-point 24 degrees for a period of time every configured minutes depending on the configuration of P29
2)	Priority parameter on P8
3)	The internal/external temperature sensor is selected by placing jumper J1 on position IN or OUT; The IN & OUT dual sensor mode could be configured by removing the jumper.
4)	If P9 is configured as ALL, defaulting display SET, and display TEP by pushing and holding "+"&"-" buttons together, 6s later return to SET display.
5)	When this parameter is programmed as ON, if the parameter number 5 is setted up as ECO and the room is unoccupied, the equipment will start in ECO mode.
6)	If it shows 0 seconds, the auxiliary output will remain active while the key-card input is active and it will be disconnected when the key-card input is switched off and exceed the setted time in parameter number 6.

Hotowell Modbus Protocol

Software Reference No.:HTW-61-EW001- V0.2

MODBUS RTU

Baud rate : 4800 No Parity bit, 8 Data bit, 1 Stop bit:

1. Basic description

No.	Parameter	Protocol provision
1	Operating mode	RS-485 connection, master-slave
2	Physical interface	A(+),B(-) 2-wire system
3	Baud rate	4800
4	Byte format	No Parity bit, 8 Data bit, 1 Stop bit
5	Transmission mode	RTU format
6	Thermostat address	1-255
7	Command code	03-read data, 06/10-set data
8	CRC check code	CRC-16
9	CRC verification mode	CRC-16

2.Command frame:

1).Command code 03: Read data (“x” can only be “0x01”-read single data or “0x27”-read all data)

Command frame given by upper computer:

01	03	9C	40	00	x	CRC_L	CRC_H
Device ID	Command code	Starting address	Register address number	CRC check			

Response frame given by thermostat:

01	03	x*2	Data1_H	Data1_L	...	DataX_H	DataX_L	CRC_L	CRC_H
Device ID	Command code	Data byte length	Data 1		...	Data x		CRC Check	

2).Command code 06: Write single data

Command frame given by upper computer:

01	06	9C	40	Data_H	Data_L	CRC_L	CRC_H
Device ID	Command code	Starting address	Register address	CRC Check			

Command frame given by thermostat:

01	06	9C	40	CRC_L	CRC_H	
Device ID	Command code	Starting address	CRC Check			

3).Command code 10: Write all data (Total 35 items can be written)

Command frame given by upper computer:

01	10	9C	40	00	23	46	Data1_H	Data1_L
Device ID	Command code	Starting address	Register address number	byte length	Data 1			
Data2_H	Data2_L	Data35_H	Data35_L	CRC_L	CRC_H		
Data 2		Data 35		CRC Check			

Command frame given by thermostat:

01	10	9C	40	00	23	CRC_L	CRC_H
Device ID	Command code	Starting address	Register address number	CRC Check			

2. Register address

Address	Meaning	Read/Write	Value
40000	On/off control	R/W	On=0x55 off=0xaa
40001	Keyboard lock	R/W	Lock=0x55 unlock=0xaa
40002	Working model	R/W	Cool=0x11 heat=0x22
40003	Fan speed	R/W	Auto=0x00 low=0x01 middle=0x02 high=0x03
40004	Rely output status	R	BIT=1,relay has output;BIT=0,relay has no output BIT0:low fan BIT1:mid fan BIT2:high fan BIT3:valve status BIT4:AUX status(when 4pipes)
40005	Room temp	R	Communicate data=room temp*10
40006	Water temp	R	Communicate data=water temp*10
40007	Seting temp	R/W	Communicate data=seting temp*10
40008	Room card status	R	No card=0x00 with card=0x01
40009	Aux control	R/W	Aux on=0x55 aux off=0xaa
40010	Lamp control	R/W	Lamp on=0x55 lamp off=0xaa
40011	Parameter1	R/W	C=0x00 F=0x01
40012	Parameter2	R/W	1fan=0x00 3fan=0x01
40013	Parameter3	R/W	No=0x00 yes=0x01
40014	Parameter4	R/W	No=0x00 yes=0x01
40015	Parameter5	R/W	eco=0x01 anti=0x02 off=0x03
40016	Parameter6	R/W	Communicate data= Parameter6 time
40017	Parameter7	R/W	No=0x00 yes=0x01
40018	Parameter8	R/W	No=0x00 yes=0x01
40019	Parameter9	R/W	Set=0x01 temp=0x02 all=0x03
40020	Parameter10	R/W	2 P=0x00 4P=0x01
40021	Parameter11	R/W	CA=0x00 LI=0x01
40022	Parameter12	R/W	PSH=0x00 STH=0x01
40023	Parameter13	R/W	Communicate data= Parameter13*10
40024	Parameter14	R/W	Communicate data= Parameter14*10
40025	Parameter15	R/W	Communicate data= Parameter15*10
40026	Parameter16	R/W	Communicate data= Parameter16*10
40027	Parameter17	R/W	Communicate data= Parameter17*10
40028	Parameter18	R/W	Communicate data= Parameter18*10
40029	Parameter19	R/W	Communicate data= Parameter19*10
40030	Parameter20	R/W	Communicate data= Parameter20*10
40031	Parameter21	R/W	Off=0x00 on=0x01
40032	Parameter22	R/W	CO=0x00 HE=0x01
40033	Parameter23	R/W	NO=0x00 NC=0x01
40034	Parameter24	R/W	Communicate data= Parameter24 time
40035	Parameter25	R/W	Reset=0x01
40036	Parameter27	R/W	1=0x01 2=0x02 3=0x03
40037	Parameter28	R/W	Communicate data= Parameter28 time
40038	Parameter29	R/W	1=0x01 2=0x02 3=0x03