Honeywell

MicroniK 200

R7426B,C

TEMPERATURE CONTROLLER WITH REAL-TIME CLOCK

SPECIFICATION DATA

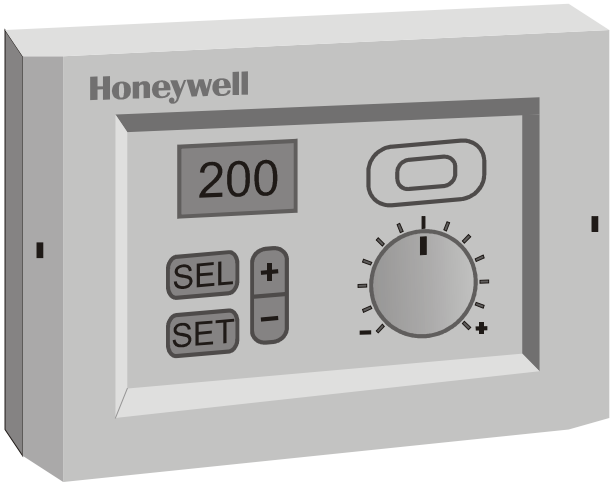


Fig. 1. Temperature controller

GENERAL

The R7426B,C temperature controllers cover all space and/or discharge air temperature applications within the specified control range of 0...50°C (LOw range) requiring sequence operation of heating, mixed air damper or energy recovery system and cooling with optional outside air temperature compensation reset of the main setpoint. The controllers can be configured to perform space or discharge air or space-discharge air temperature cascade control with limit control.

For special higher temperature control applications, the control range 0...130°C (HI range) can be selected.

FEATURES

- **Weekly time schedule with up to six switching points per day**
- **Automatic daylight saving time change**
- **Four different operating modes: Comfort, Standby, Night, and OFF**
- **Yearly holiday programming in advance**
- **Three types of holiday schedules**
- **Self-adaptive optimum start program for room control system**
- **Night cycle program**

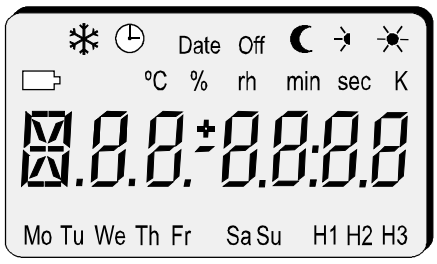


Fig. 2. LC Display

Order Numbers

Order-No.	Controller Description
R7426B2012	Temperature controller with integrated real time clock (RTC), Plant/System ON/OFF output, and three 3-position floating outputs. The controller offers the choice of selectable different output sequence operations and output signals suitable to drive solid-state relays or step relays.
R7426C2010	Temperature controller with integrated real time clock (RTC), Plant/System ON/OFF output, and three analog outputs. The controller offers selection of different output sequence operations.

CE

TECHNICAL DATA

General	Electronic	8-bit microcontroller, 10-bit A/D converter, EEPROM, and LC display	
	Power supply	24 Vac +10...-15%, 50/60 Hz	
	Power consumption	3 VA + Actuator power requirements	
	Control range	0...50°C	
	Battery	Type CR2032 (life time ≈ 8 years)	
Temperature Inputs	T1	Main temperature sensor	accuracy ±0.5 K excluding sensor
	T2	Cascade temperature sensor	
	T3	Compensation temperature sensor	
Sensor type[1]	**Automatic identification of sensor type**	**Temperature range**	**Characteristics**[2]
	Pt 1000	-30....+130°C	1000 Ω at 0°C
	BALCO 500	-30....+130°C	500 Ω at 23.3°C
	NTC 20kΩ	-30....+85°C / -30....+130°C[1]	20 kΩ at 25°C
CPA/SPA-Input[1]		**CPA/SPA range**	**Sensor & CPA/SPA types**
	CPATYP 0	CPA: ±5 K	internal
	CPATYP 1 (953...1053 Ω)	CPA: ±5 K	T7412B1016 (Pt 1000)
	CPATYP 2 (0...100 kΩ)	CPA: ±5 K	T7412B1057 (Pt 1000) T7412C1030 (Pt 1000) T7412B1008 (NTC 20kΩ) T7412C1006 (NTC 20kΩ)
	CPATYP 3 (10...20 kΩ)	SPA: 15...30°C	T7412B1024 (BALCO 500) T7412B1040 (Pt 1000)
	CPATYP 4 (0...10 kΩ)	CPA: ±5 K	HCW 23 (setpoint wheel printed with +/- 5 K)
	CPATYP 5 (0...100 kΩ)	SPA: 15...30°C	43193982-001
	CPATYP 6 (0...100 kΩ)	SPA: 0...50°C or 0...130°C	43193982-001
Analog input	Humidity deviation (X_{wrh})	-5...+5 Vdc, 200 mV / %rh	
Digital inputs		**Mode**	**Potential free contact**
	Occupancy	unoccupied occupied	open > 40 kΩ closed < 100 Ω
	Freeze protection input	freeze protection operation normal operation	open > 40 kΩ closed < 100 Ω
Outputs	ON/OFF output	OFF / ON	max. load 450 mA at 24 Vac per output
	TRIAC outputs	• Floating[1] • 2, 3, 4, 6 or 15-stage[1] ON (24 Vac) / OFF (0 Vac) • Pulse-width modulation[1] 0...100% based on run time	
	Analog outputs on controller R7426C	Control range[1] 0/2...10 Vdc (0...100%) full range 0...12 Vdc	max. load 1.2 mA at 12 Vdc
Ambient limits	Operating temperature	0...50°C (0...122°F)	
	Transport and storage temperature	-35...+70°C (-31...+158°F)	
	Relative humidity	5...95%rh non-condensing	
Safety	Protection class	II as per EN60730-1	
	Protection standard	IP30 or IP40 (front panel mounting) as per EN60529	
Housing	Dimensions (H x W x D)	105 x 152 x 37 mm	
	Weight	250 g	
	Mounting	Front door, back panel, wall, or rail	
Connections	Connection terminal	terminals max. 1 x 1.5 mm^2	

[1] Selectable [2] same sensor type must be used for T1, T2, and T3

CONTROL AND CONFIGURATION PARAMETER

Control Parameter		Parameter Description	Setting			Reso-lution	Unit
No.	Name		Low	High	Default		
P.01	W1	Main setpoint for input T1	0	50	21	0.5	°C
P.02	Wlim	Limit setpoint (low or high) for input T2	5	50	16	1	°C
P.03	Wcomp	Compensation changeover point for input T3	-5	40	20	1	°C
P.04	Wi	Winter compensation authority	-350	+350	0	2	%
P.05	Su	Summer compensation authority	-100	+100	0	1	%
P.06	Wcas	Submaster or cascade setpoint	OFF, 0	50	20	0.5	°C
P.07	Rcas	Cascade reset span adjustment	0	40	10	0.5	K
P.08	Xp1	Throttling range (main control loop) T1	0.5	40	2	0.5	K
P.09	Xp2	Throttling range (cascade control loop) T2	0.5	40	10	0.5	K
P.10	Xpc	Cooling throttling range for sequence control	OFF, 1	40	3	0.5	K
P.11	Xph	Heating throttling range for sequence control	1	40	6	0.5	K
P.12	tr1[1)]	Reset time (main control loop) T1	OFF, 20 s	20min	OFF	10/0.5	sec/min
P.13	tr2[1)]	Reset time (cascade control loop) T2	OFF, 20 s	20min	OFF	10/0.5	sec/min
P.14	MINPOS	Minimal pos. for air damper actuators	0	50	20	1	%
P.15	Ystart	Start point for mid range shift of output Y1	-20	+20	0	0.5	K
P.16	SOFFS	Offset of main setpoint in Standby mode	0	10	2	0.1	K
P.17	T1Cal	Calibration of temperature sensor T1	-20	+20	0	0.1	K
P.18	T2Cal	Calibration of temperature sensor T2	-20	+20	0	0.1	K
P.19	T3Cal	Calibration of temperature sensor T3	-20	+20	0	0.1	K
P.20	RetOffs	Return air offset to simulate exhaust air cond.	OFF, 0	5	OFF	0.1	K
P.21	RuntimeY1	Actuator run time for output Y1	6	180	60	1	sec
P.22	RuntimeY3	Actuator run time for output Y3	6	180	60	1	sec
P.23	RuntimeY2	Actuator run time for output Y2	6	180	60	1	sec
P.24	NightLow	Night low limit against temperature extremes	OFF, 8	19	OFF	1	°C
P.25	NightHigh	Night high limit against temperature extremes	OFF, 21	40	OFF	1	°C
P.26	NOFFS	Offset of main setpoint in Night mode	0	30	5	0.1	K

Config. Parameter		Values	Default	Unit
No.	Name			
C.01	DIR/REVY1	Dir, Rev (R7426C, only)	Dir	
C.02	DIR/REVY3		Dir	
C.03	DIR/REVY2		Dir	
C.04	Ctrltyp[2)]	Lo = 0...50°C (factory preset), Hi1 = 0...130°C, Hi2 = 0...130°C		
C.05	CPATYP	0 = internal (default), 1 = ±5 K (953...1053 Ω), 2 = ±5 K (0 Ω...100kΩ), 3 = 15 … 30°C (10...20 kΩ), 4 = ±5 K (0...10 kΩ), 5 = 15 … 30°C (0...100 kΩ), 6 = 0...50°C or 0...130°C (0...100 kΩ)	0	
C.06	YRange	0 = 2 … 10 Vdc , 1 = 0 … 10 Vdc (R7426C, only)	1	
C.08	Y1Mode	0= floating, 1= 2 stage ON/OFF, 2= 3 stage ON/OFF, 3 = pwm, 4 = unconfig. (safe state is configured prior to controller's start-up) (R7426B, only)	4	
C.09	Y3Mode		4	
C.10	Y2Mode		4	
C.11	YMode	0: Y1 = D, Y2 = C, Y3 = H 1: Y3/2/1 = H or C 2: Y3/1 = H, Y2 = C 3: Y3/1 = C, Y2 = H 4: Y1 = 2Pos D, Y2 = C, Y3 = H 5: Y3/1 = 15H, Y2 = C	0	
C.12	T2ext	0 = T2 installed 1 = T1 signal used for T2	0	
C.13	LimTyp	0 = Low limit 1 = High limit	0	
C.14	Senstyp	0 = Auto detection 1 = NTC sensor type	0	
C.15	Y1CTRF	Output Y1 used for: 0 = mixed air damper 1= energy recovery	0	
C.16	AddHour	Adjusts the month for winter/summer time change: 0 (disabled) = Min. 12 = Max.	3	month
C.17	SubHour	Adjusts the month for summer/winter time change: 0 (disabled) = Min. 12 = Max.	10	month

Config. Parameter		Values		Default	Unit
No.	**Name**				
C.18	**PSTG_H**[3]	Prestart gradient for heating:	0 (disabled) = Min. 2 = Max.	0	K/min
C.19	**PSTG_C**[3]	Prestart gradient for cooling:	0 (disabled) = Min. 2 = Max	0	K/min
C.20	**tvd**	Use damper before comfort time:	0 (normal control) = Min. 90 = Max.	15	min
C.21	**Adapt**	Optimum Start Self Adaption speed:	0 = Min. 100 = Max.	50	%
C.22	**Adr**[2]	Serial communication address:	0 = Min. 255 = Max.	254	
C.23	**DefProg**	0 = No Default programming	1 = Initiates Default programming	0	

[1] for tr > 2 min resolution = 0.5 min, for tr < 2 min resolution = 10 sec

[2] actual value will not be changed during reset to default parameter

[3] can be overwritten by controller for self-adaption purposes, resolution = 0.01 K/min

FUNCTIONS

Real-Time Clock

The time clock performs automatic change of the controller mode to OFF, Night, Standby, or Comfort in accordance with the programmed time schedule. In Standby or Night mode, the **SOFFS** or **NOFFS** is added (cooling) to and subtracted (heating) from the calculated control point. Schedules for one week and up to six switching points per day can be programmed in advance and repeated week after week. In addition, three different holiday schedule types H1, H2 and H3 can be programmed. One of these holiday types can be assigned to each holiday date of the year (01.01. ... 31.12.). Holiday type H1 and H2 is valid only for this specific day and is reset to normal time schedule at midnight of that day. H3 is valid for every year and repeated year after year for fixed holiday dates. H1 can be programmed to be in OFF mode the whole day and H2 to be ON for a short period of time on the last day of a longer holiday period to preheat or precool the space in advance before the first occupied day.

Optimum Start Program

The optimum start program's objective is to minimize total energy consumption by calculating in room control applications the start time for heating and cooling mode which will bring its respective space temperature to the boundary of the comfort zone at the time of occupancy start. The program will start the ventilation system at the calculated start time with forced return air recirculation mixed air damper position or full energy recovery valve position to minimize energy consumption during the start-up period. At a programmable time before occupancy start, the controller will switch the output signal Y1 to normal and will supply fresh air to the space in mixed air applications. The optimum start program uses historical data for self-adaptive adjustment.

Night Cycle Program

The night cycle program offers not only energy conservation, but also the ability to assign OFF mode night low or high limits with 1°K hysteresis for the protection of a space and its contents against temperature extremes. It automatically cycles between the user selected upper and lower limits and turns on full heating or cooling whenever the limits are reached.

APPLICATION

The R7426B,C controllers can be used for sequence control applications of heating, mixed air damper or energy recovery system, and cooling.

NOTE: All diagrams show proportional control action, only. If P+I control is in operation, the slopes for heating and cooling are not defined.

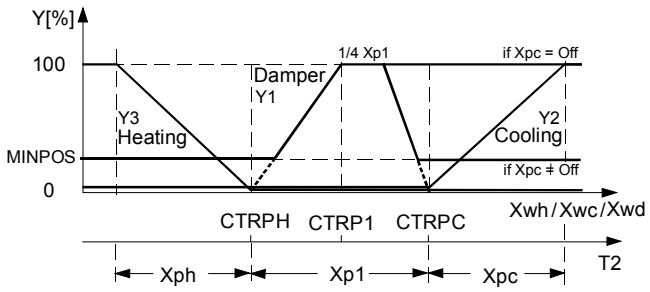
Temperature Sequence Control with Heating, Mixed Air Dampers, and Cooling

This application will be active with the R7426B,C controllers when T2 is not connected. It can be used for sequence control of a heating valve, a mixed air damper, and a cooling valve.

The characteristic of each output on the R7426C controller can be selected via the control parameters **DIR/REVx** (x = Y1, Y2, or Y3). The diagram shows Dir characteristic for all outputs.

Within the range **Xp1**, the damper signal is controlled as shown in the diagram below. If no cooling actuator is available, the control parameter **Xpc** can be set to OFF and the damper output is maintained at 100% above control point (CTRP1).

If the damper output should be decreased to **MINPOS** level above control point (CTRP1) as shown in the diagram, the control parameter **Xpc** has to be adjusted to any value between 1 and 40 K, also if no cooling actuator is available.

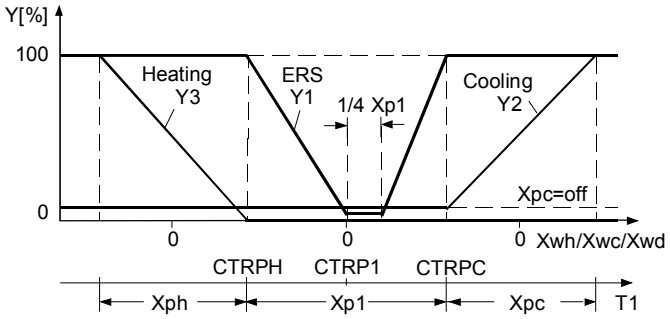


NOTE: If the R7426B controller with floating output is used for mixed air damper control, you must ensure that the output load of maximum 450 mA is not exceeded.

Temperature Sequence Control with Heating, Energy Recovery System, and Cooling

For applications with energy recovery system (ERS), the configuration parameter **Y1CTRF** has to be set to 1 to perform a reverse acting Y1 output. The adjustment **MINPOS** is inactive in this configuration and the control parameter **Xpc** has to be set to OFF if the output should be maintained at 0% above the control point (CTRP1) for summer operation.

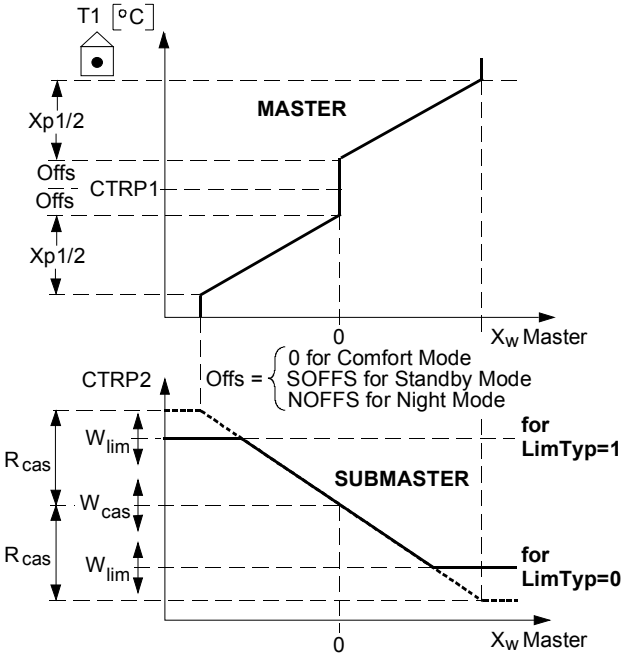
Within the range **Xp1**, the energy recovery system is controlled as shown in the diagram below. With the R7426C controller, a rotary energy recovery wheel can also be controlled instead of a valve if the output signal of 0...10 Vdc or 2...10 Vdc is suitable to control the rotation speed of this device.



Temperature Cascade Control with Heating, Mixed Air Dampers, and Cooling

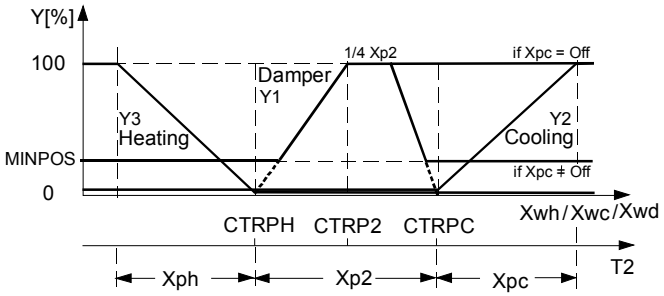
This application will be active with the R7426B,C controllers if temperature sensor T2 is connected and the control parameter $\mathbf{W_{cas}}$ is set to any value other than OFF. It can be used for sequence control of a heating valve, a mixed air damper, and a cooling valve.

The controllers provide cascade control as shown below:



Low limit of CTRP2 is performed if control parameter **LimTyp** = 0 and high limit of CTRP2 is performed if control parameter **LimTyp** = 1.

Within the range **Xp2**, the damper signal is controlled as shown in the diagram below. If no cooling actuator is available, the control parameter **Xpc** can be set to OFF. If control parameter **Xpc** = OFF, the cooling signal is set to 0% and the damper output is maintained at 100 % above control point (CTRP2).

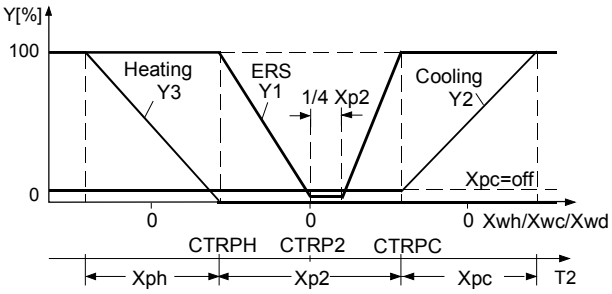


NOTE: If the R7426B controller with floating output is used for mixed air damper control, you must ensure that the output load of maximum 450 mA is not exceeded.

Temperature Cascade Control with Heating, Energy Recovery System, and Cooling

For applications with energy recovery system (ERS) the configuration parameter **Y1CTRF** has to be set to 1 to perform a reverse acting Y1 output. The adjustment **MINPOS** is inactive in this configuration and the control parameter **Xpc** must be set to OFF if the outputs Y1 and Y2 should be maintained at 0% above the control point (CTRP2) for summer operation.

Within the range **Xp2**, the energy recovery system is controlled as shown in the diagram below. In the case of the R7426C controller, a rotary energy recovery wheel can also be controlled instead of a valve if the output signal of 0...10 Vdc or 2...10 Vdc is suitable for controlling the rotation speed of this device.



Economizer Modes

The economizer modes are suitable for installations where the main temperature sensor (T1) is installed in the exhaust air or in the room with a constant offset between room and exhaust air conditions. The offset value is programmable within 0...5 K with the control parameter **RetOffs** which will be added to the actual measured room temperature value to simulate exhaust air conditions.

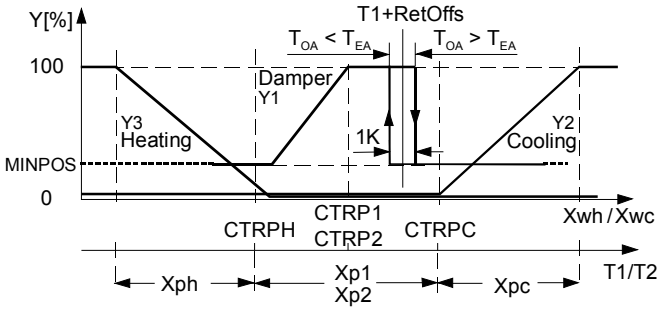
The economizer mode is disabled if the value of the control parameter **RetOffs** is programmed to OFF, or if no outdoor air temperature sensor is connected.

By comparing the outside air condition with the exhaust air condition, the output for Y1 on the controller operates as follows:

Mixed Air Dampers

RetOffs ≠ OFF; **Y1CTRF** = 0

AIR CONDITION	Y1
Outside air temperature > Exhaust air temperature	MINPOS
Outside air temperature < Exhaust air temperature	Included in heating sequence control (direct acting)

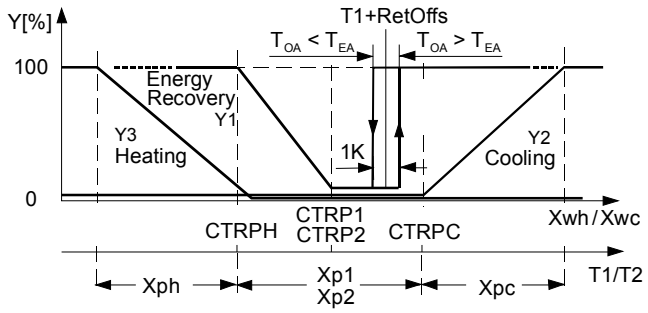


A fixed hysteresis of 1K is used, to switch between **MINPOS** and actual Y1 signal.

Energy Recovery System

RetOffs ≠ OFF; **Y1CTRF** = 1

AIR CONDITION	Y1
Outside air temperature > Exhaust air temperature	100%
Outside air temperature < Exhaust air temperature	Energy Recovery System included in heating sequence control. MINPOS is not active.



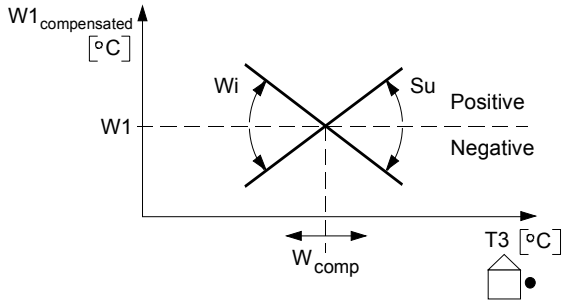
A fixed hysteresis of 1 K is used to switch between 0% position and actual Y1 signal.

CONTROLLER FUNCTIONS

Outside Air Temperature Compensation

Outside air temperature compensation is performed when T3 is connected. The control parameter $\mathbf{W_{comp}}$ defines the compensation changeover point for summer and winter compensation. The degree of summer and winter compensation is defined by control parameters **Wi** and **Su**.

Winter compensation is performed if temperature T3 < $\mathbf{W_{comp}}$. Summer compensation is performed if temperature T3 > $\mathbf{W_{comp}}$.



Smoothing Filter for Outside Air Temperature Input

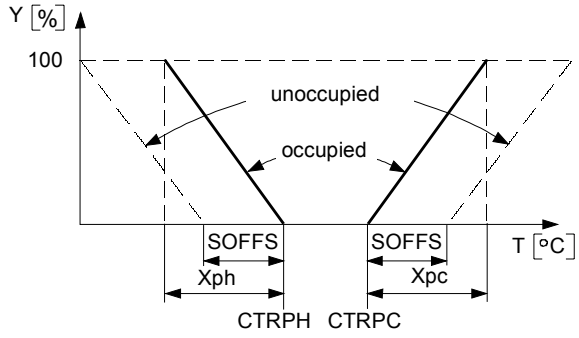
A smoothing filter for the outside air temperature input T3 is incorporated to eliminate sudden temperature variations. This provides more stable operation of the control system. This function will work only if the controller parameters have never been changed by means of the PC tool.

Occupied/Unoccupied Function (SOFFS)

A potential free contact can be used between terminals 1 and 4 to switch the controller between occupied (contact closed) or unoccupied (contact open) mode. The input is active during Comfort and Standby mode.

In occupied mode, the temperature set point **W1** is used for the control point calculation. In unoccupied mode, the **SOFFS** parameter value is added (cooling) to and subtracted (heating) from the calculated control point for cooling and heating.

The diagram below shows the occupied/unoccupied function for sequence control.



Freeze Protection

If the contact connected to the freeze protection input is open, the heating valve (Y3) will be driven into the fully open position. The final control devices operated by the outputs (Y1 and Y2) will be driven in the closed position.

In the case of controllers with RTC, the ON/OFF output will be switched off.

A closed contact performs a frost recovery:

Conditions of Outdoor Temp. T3	Frost Recovery
> 6°C or T3 not connected	Main temperature control
< 6°C	Setpoint W1 is temporarily raised by Xp1 and linearly decreased to its normal value over approx. 10min.

Freeze protection operation has the highest priority over all other control operations.

Dehumidification Control by Humidity Deviation Input

Dehumidification control can also be performed using a humidity controller. The deviation input signal $X_{w\,rh}$ received from the humidity controller is compared with the cooling deviation signal of the temperature control (X_{wc}). The signal with the highest cooling demand is used to control the cooling output Y2.

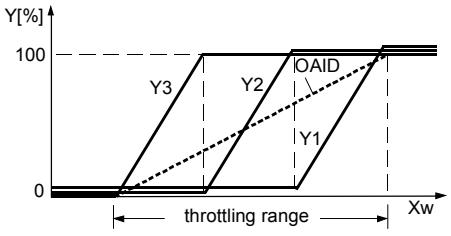
OUTPUT SEQUENCE OPERATION

The controllers are supplied from the factory configured for sequence operation of heating, mixed air, and cooling control.

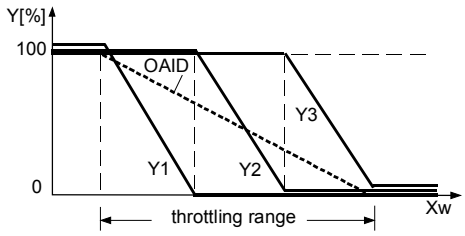
NOTE: If a control range of 0...130 °F (C.04 = 1) is selected, then only multi-stage heating (**Ymode** = 1) is applicable.

The output sequence operation can be configured for the following control applications in accordance with the parameter setting **Y1CTRF** or **YMode**:

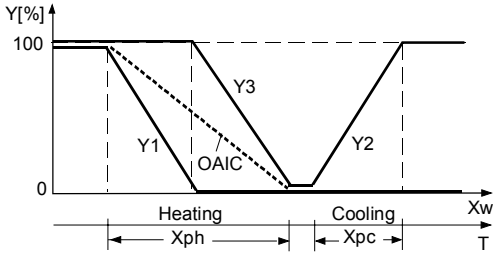
- Sequence control for cooling with three outputs (**Y1CTRF** = 0 and **YMode** = 1)



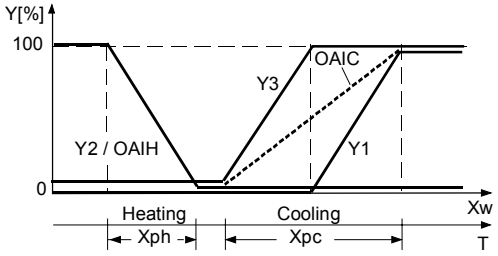
- Sequence control for heating with three outputs (**Y1CTRF** = 1 and **YMode** = 1)



- Sequence control with two outputs for heating and one output for cooling (**YMode** = 2)



- Sequence control with one output for heating and two outputs for cooling (**YMode** = 3)



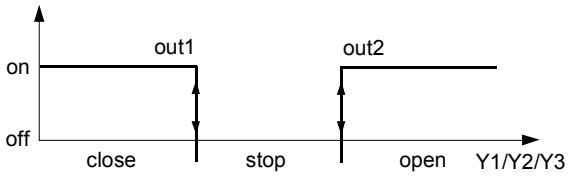
OUTPUT FUNCTIONS

The R7426B controllers provide a choice of output signals suitable for operating a range of final control devices according to the parameter setting of **YMode** and **YxMode** (x = 1, 2, or 3) control parameters.

3-position Output for Valve or Damper Actuators (floating mode)

The controller converts the deviation signal to a proportional output pulse which drives the actuators depending on the **Runtimex** (x = Y1, Y2, or Y3) parameter value.

Parameter setting for Heating / Cooling Control Outputs : **YMode** = 0, 1, 2 or 3; **YxMode** (x = 1, 2, or 3) = 0.



An automatic synchronization function ensures correct positioning of the actuators. This is performed by running all actuators to the closed position periodically. The run time for synchronization is derived by control parameter **RuntimeYx** (x = 1, 2, or 3) multiplied by 1.25.

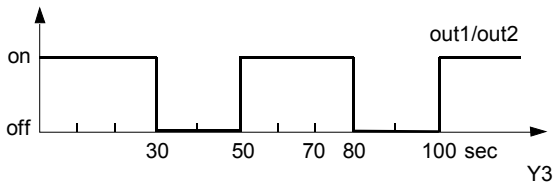
Synchronization by the controller is initiated:

- after power up reset (initial start)
- after 250 control steps as soon as control output is below 5 %
- if plant/system ON/OFF input is switched to OFF

Electric Heat Current Valve (pwm output)

The pulse-width modulated output is suitable for driving electric heat current valves and is controlled from the heating signal. The interval or total cycle time is set by the control parameter **RuntimeY3**.

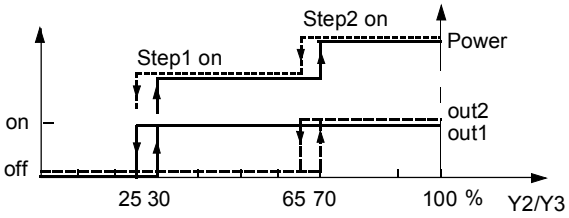
The diagram below shows as example, 60% Output Signal with Motor **RuntimeY3** set to 50 sec: **YMode** = 0; **Y3Mode** = 3.



2-stage ON/OFF Sequence Control

The R7426B controllers convert the output signal into a two-stage ON/OFF sequence output signal suitable for operating relays. Two relays can be connected to provide sequence control of e.g. two electric heater stages.

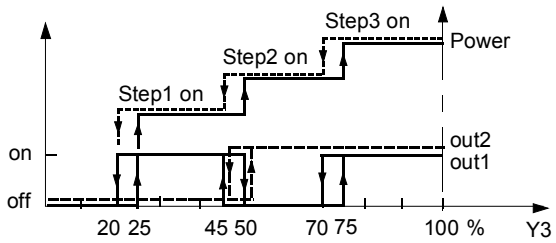
Parameter setting for Output Switching Position:
YMode = 0; **YxMode** (x = 2 or 3) = 1



3-stage Binary ON/OFF Sequence Control

The R7426B controllers convert the heating signal into a three-stage binary ON/OFF sequence as shown in the following diagram.

Parameter setting for Output Switching Position:
YMode = 0; **Y3Mode** = 2

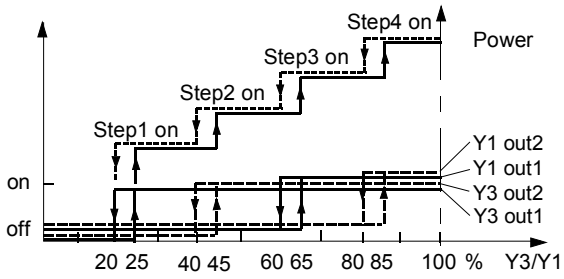


4-stage ON/OFF Electric Heating or Cooling

For **YMode** = 2, the output sequence of Y3/Y1 is controlled from the heating signal and the output Y2 is controlled from the cooling signal. For **YMode** = 3, the output sequence of Y3/Y1 is controlled from the cooling signal and the output Y2 is controlled from the heating signal.

The output of Y2 is operated in accordance with **Y2Mode**.

Parameter setting: **YMode** = 2 or 3, **Y1Mode** and **Y3Mode** = 4

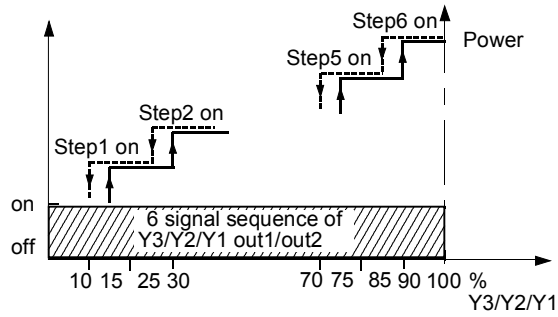


6-stage ON/OFF Sequence Control Heating or Cooling

The output sequence of Y3/Y2/Y1 is controlled from one output signal, *Main Temperature Control* or *Cascade Control.*

Parameter setting: **YMode** = 1,
Y1Mode, Y2Mode, and Y3Mode = 4

Y1CTRF = 0 (cooling) or 1 (heating)

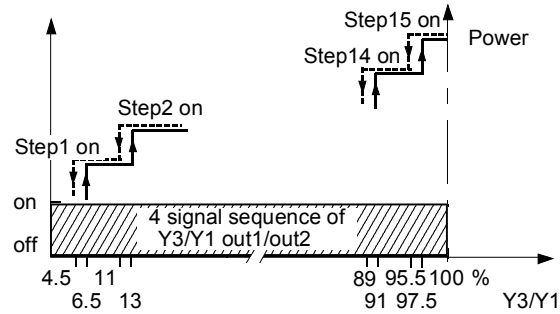


15-stage Binary ON/OFF Electric Heating and Cooling

The output sequence of Y3/Y1 is controlled from the heating signal. The output sequence of Y2 is controlled from the cooling signal.

The output of Y2 is operated in accordance with **Y2Mode**.

Parameter setting: **YMode**=5



Two-Position Damper Control

If the value of the control parameter **YMode** = 4, the damper output signal Y1 operates as two-position control as follows:

- If the controller mode ≠OFF (Comfort- Standby- or Night-mode), the output signal Y1 is set to 100%.
- If the controller mode = OFF, the output signal Y1 is set to 0%.
- The output sequence of Y2/Y3 operates as *Temperature Sequence Control with Heating and Cooling.*

ON/OFF Output

The ON/OFF output is provided to switch fans, pumps, or other MicroniK 200 controller without RTC.

If one of the following conditions occur the controller switches the ON/OFF output from OFF to ON after a fixed 3-minute time delay:

- The controller mode ≠OFF (Comfort, Standby, or Night mode).
- The night cycle program is active.
- The optimum start program is active.

If one of the following conditions occur, the controller switches the ON/OFF output from ON to OFF:

- The controller mode = OFF.
- The freeze protection input is active.
- The following function will be active in flow water temperature applications if the configuration parameter **Ctrltyp** = **Hi2**:
  The controller switches the ON/OFF output from ON to OFF if the outside air temperature is above 8°C and the output signal Y1 = 0% for more than 5 minutes during Comfort, Standby, or Night mode.

Analog Outputs on R7426C, only

Three output control signals are provided to control valve or damper actuators or E/P transducers for pneumatic actuators.

The full output range is 0...12 Vdc. The control range is common to all outputs and is software-configurable using the control parameter **YRange** to either 2...10 Vdc or 0...10 Vdc.

Each output can be selected for direct or reverse acting.

ADJUSTMENTS

Control Point / Setpoint Adjustment (CPATYP)

The control or setpoint can be adjusted via the internal or an external potentiometer connected to the CPA/SPA input. The CPA/SPA type is selected using the control parameter **CPATYP** (see page 2, *Technical Data*).

Calibration of Temperature Sensors (T1CAL, T2CAL, and T3CAL)

In case of an offset as a result of long wiring lengths, the temperature sensor inputs (T1, T2 and T3) can be adjusted separately by the control parameters **T1CAL**, **T2CAL**, and **T3CAL**.

WIRING

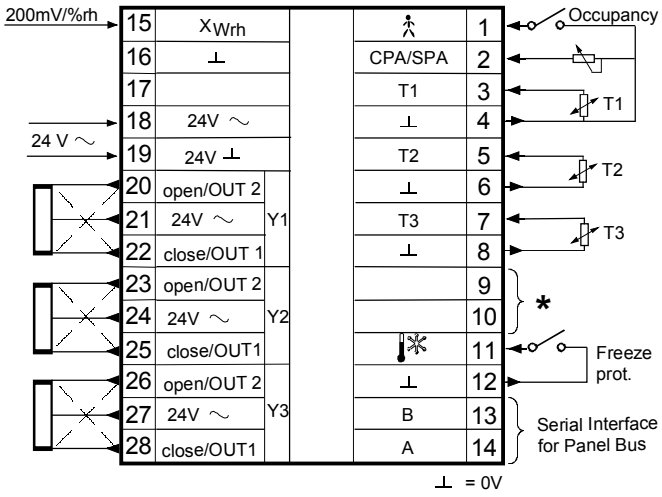
Wiring run	Type of wires	Length max.	
		1.0 mm^2	1.5 mm^2
From controller to all input and output devices	local standard	100 m	150 m

Offset for temperature sensors due to wire resistance per 10 m distance from sensor to controller:

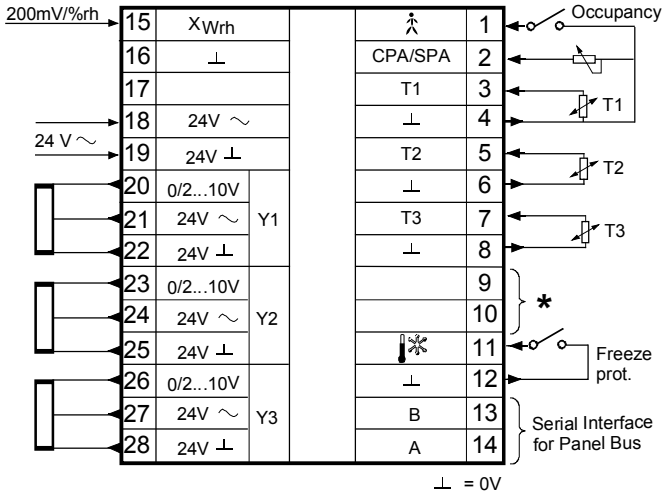
Type of wire	Temperature offset		
	Pt 1000	BALCO 500	NTC
0.5mm^2 (AWG20)	0.18°C (0.324°F)	0.3°C (0.54°F)	negligible
1.0mm^2 (AWG17)	0.09°C (0.162°F)	0.15°C (0.27°F)	
1.5mm^2 (AWG15)	0.06°C (0.108°F)	0.1°C (0.18°F)	

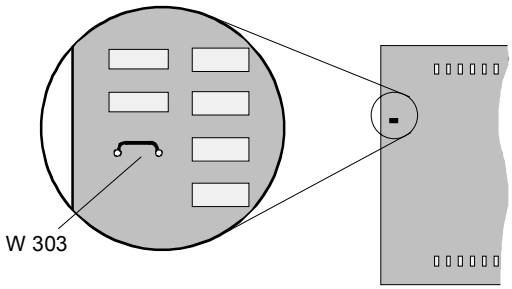
CONNECTIONS

R7426B



R7426C

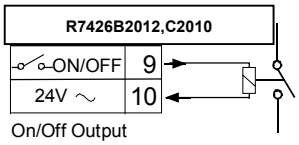




Jumper[1)]	State	Description
W303[2)]	closed open	T3 supplied by this controller T3 supplied from another controller

[1)] Default jumper position = closed
[2)] Cut (open) jumper W303 only if the T3 input is fed from another controller (parallel connection, max. 6 devices). This disconnects the T3 input from the internal power supply.

*



⚠ CAUTION

- **Outputs are not isolated from power supply**
- **Observe correct phasing with 24Vac power supply**

Fig. 3. Connections and Jumper coding

MOUNTING AND DIMENSIONS

All dimensions in mm.

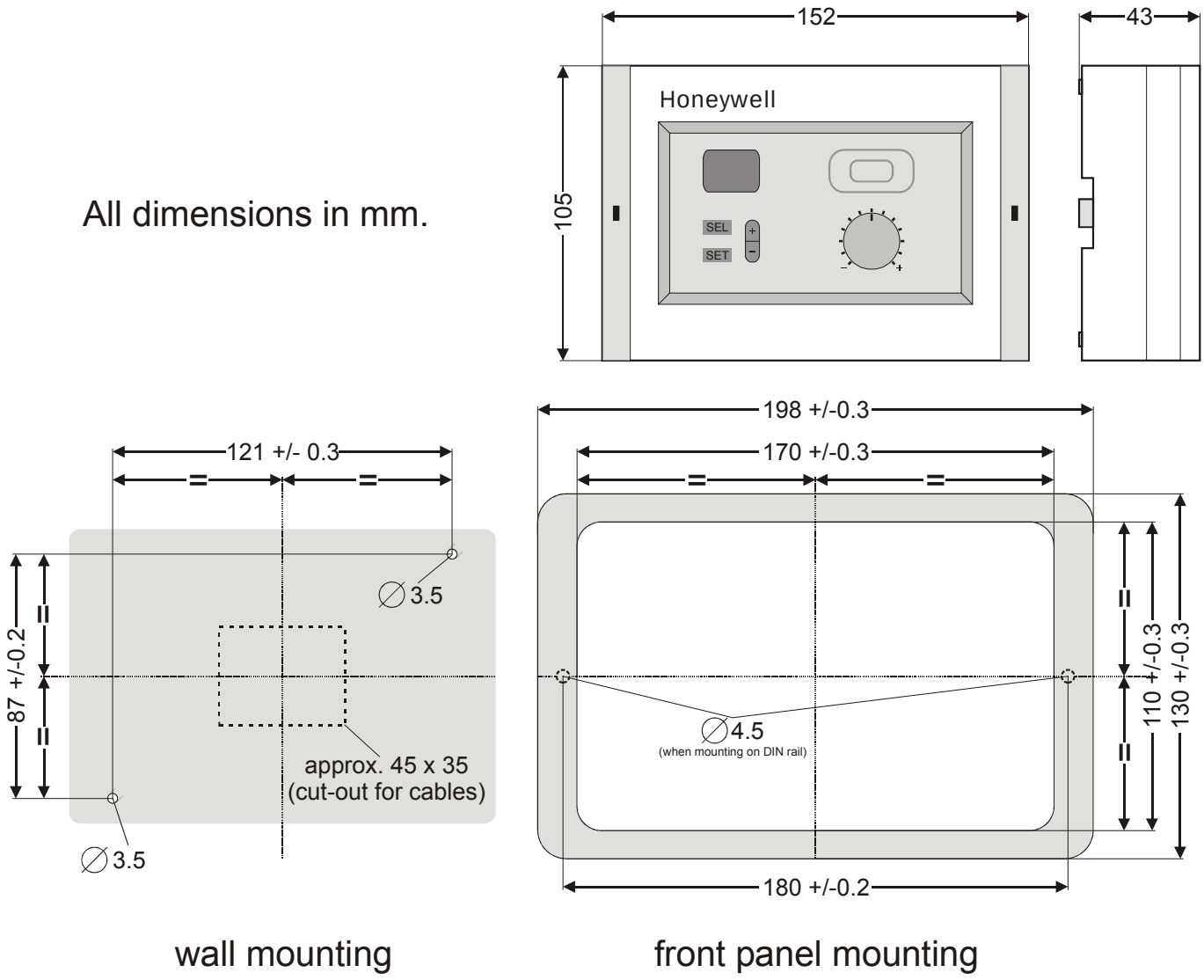


Fig. 4. Mounting and dimensions

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