



# FanCoil

AIR CONDITIONING

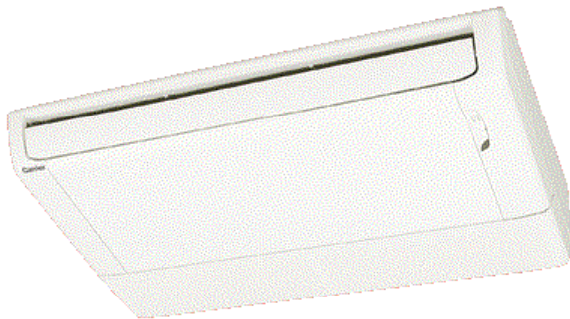


**Invensys Controls Europe**  
An Invensys Company



## FanCoil controllers

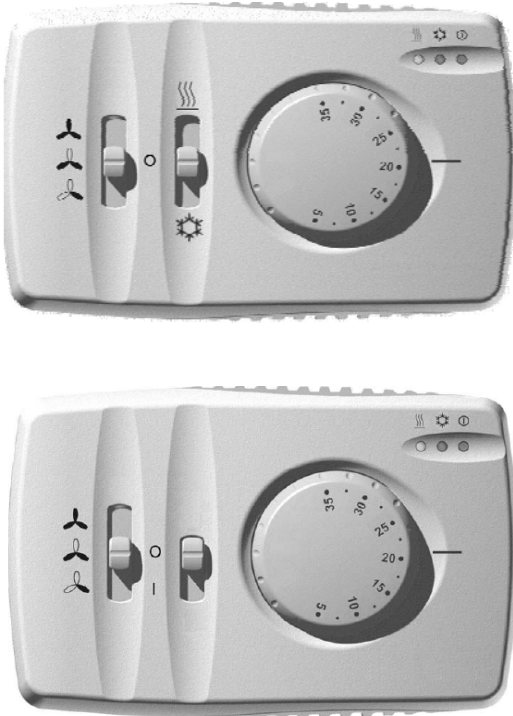
- Controllers for 2 or 4 pipes units, wall, floor, ceiling or cassette





# Models

FanCoil Basic



FanCoilPlus

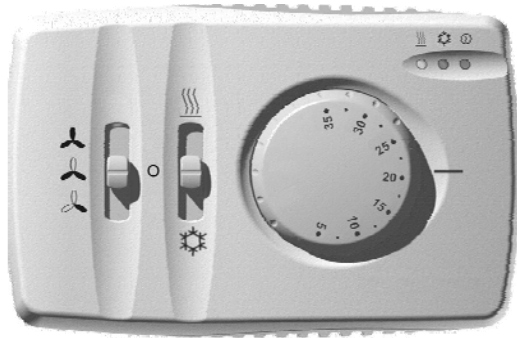


FanCoilBasicomm





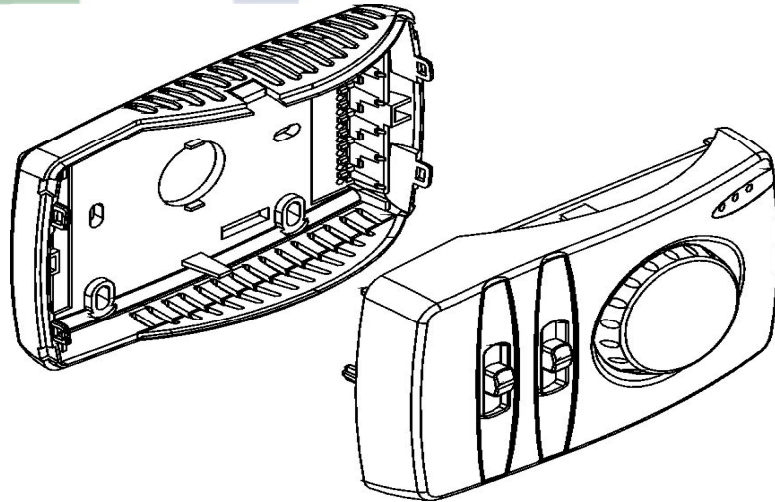
## Characteristics-all models



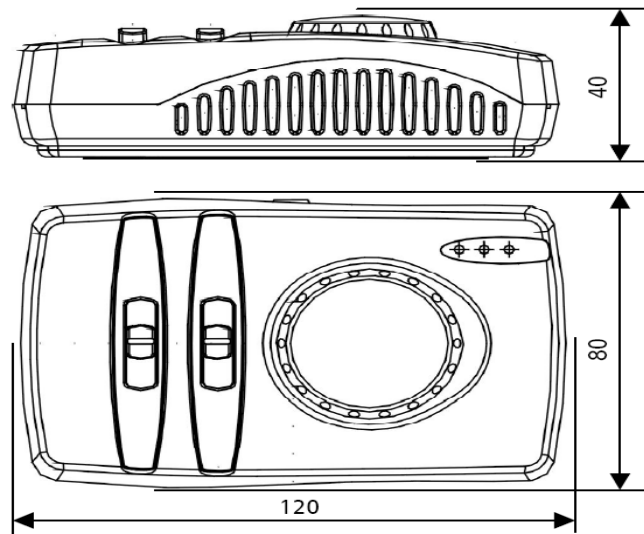
- Wall mounting
- Power supply: 230V
- NTC probes (double insulation)-10...70°C
- IP30
- Power consumption:12W
- 3 leds to indicated operating mode (H or C) and output status
- Conformity at these directives:  
EN60730  
EN50081-1  
EN50082-1



## Characteristics-all models



- Plastic case divided in two parts: 1 fixed on the wall, with connectors and wiring, 1 removable with knob, sliders (for easy replacement)



- Mechanical dimensions:
- 120X80X40mm



## FanCoil Basic: Characteristics



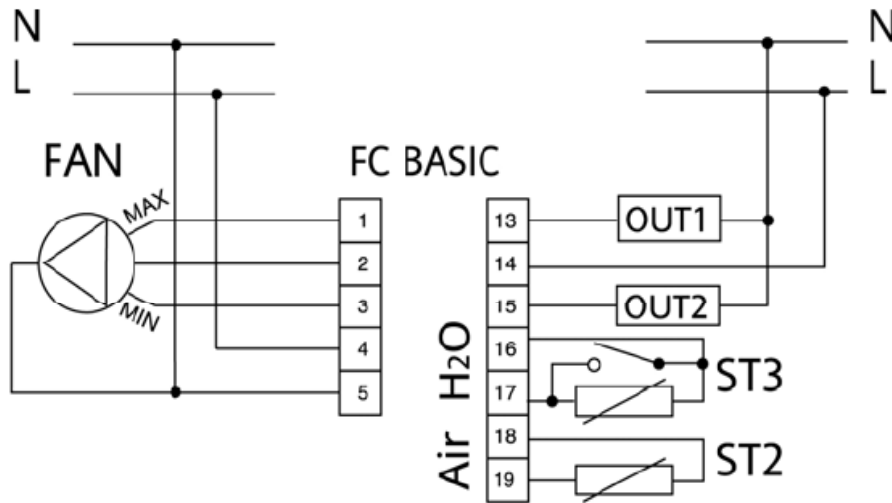
- Two available user interface:
  1. Setpoint knob (5...35°C) +fan speed+H-C-OFF
  2. Setpoint knob (5...35°C) +fan speed+ON OFF
  3. Relay output for valves and fan 230V,5(2)A

DIP nr.	Description	On	Off	default (factory pre-set)**
6	Air sensor used	Local	Remote	On
5	Fan status in cooling	Thermostatic demand	Always ON	Off
4	<i>Dead Zone</i> value Hysteresis value	5°K 2°K	2°K 1°K	Off
3	Electric heater control	Regulation	Integrated	Off
	time for <i>Hot Start</i>	HS=0 (not delayed)	delayed	
2	2- or 4-pipe system	4-pipe	2-pipe	Off
1	Electric Heater presence	Present	Not present	Off

Dip switch for configuration as indicated in the table

**NOTE: DIP 1&2 Available on Universal models only**

## FanCoil Basic: Characteristics



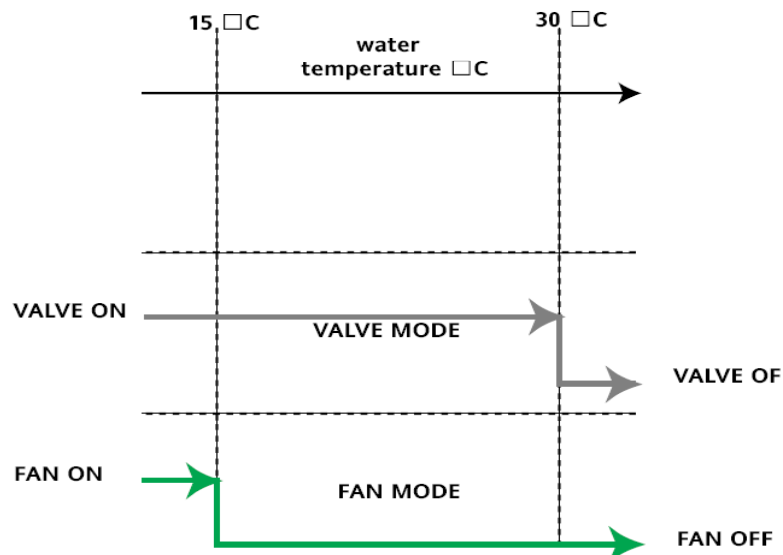
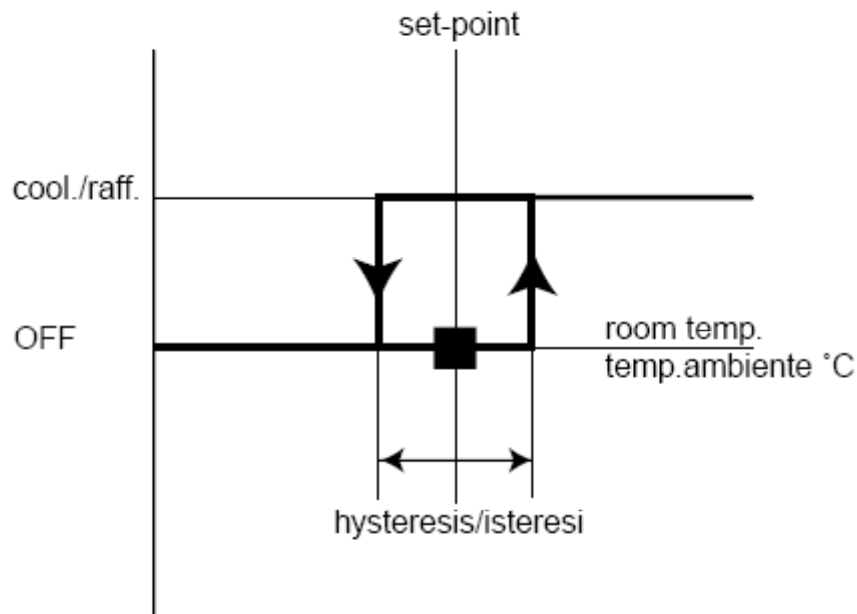
- 2 pipes dedicated models
  1. One water valve (H or C)
  2. Electrical heater (adjustable by dip-switch)
- 4 pipes dedicated models
  1. One water valve for H
  2. One water valve for C
- Universal models adjustable by dip-switch as before indicated

Index	Function	Description
FAN	Delivery <i>fan control</i> (refer to <i>Fan demand operation</i> )	Starts ventilation. The <i>fan control slider</i> can be used to set the phase on three different terminals to permit manual selection of the 3 fan speeds.
OUT1	<i>Valve</i> or electric heater control	If there is a battery of <i>electric heaters</i> , this relay pilots it; if not, it is used as a second <i>valve</i> for a <i>4 pipe installation</i> .
OUT2	<i>Valve</i> control	Permits water to flow into the battery.

**NOTE:** Air probe can be remote (connectors 18-19), or local (mounted on board) by dip-switch  
 Use DOUBLE INSULATION NTC PROBES ONLY!!!



# FanCoil Basic: Temperature regulation COOLING



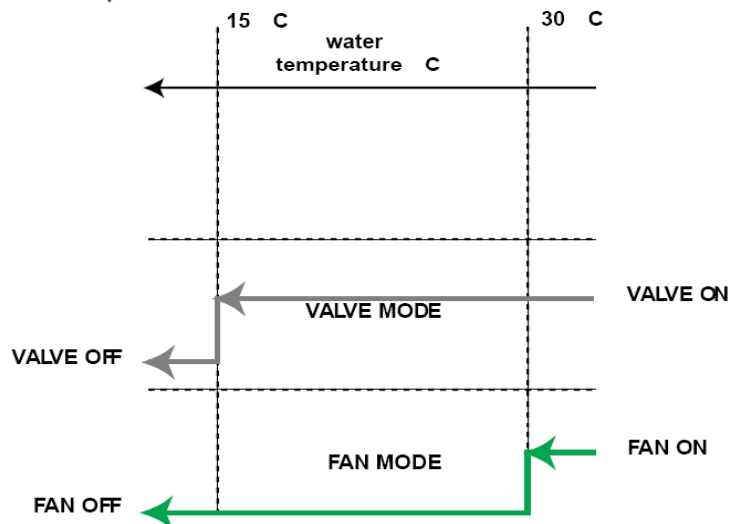
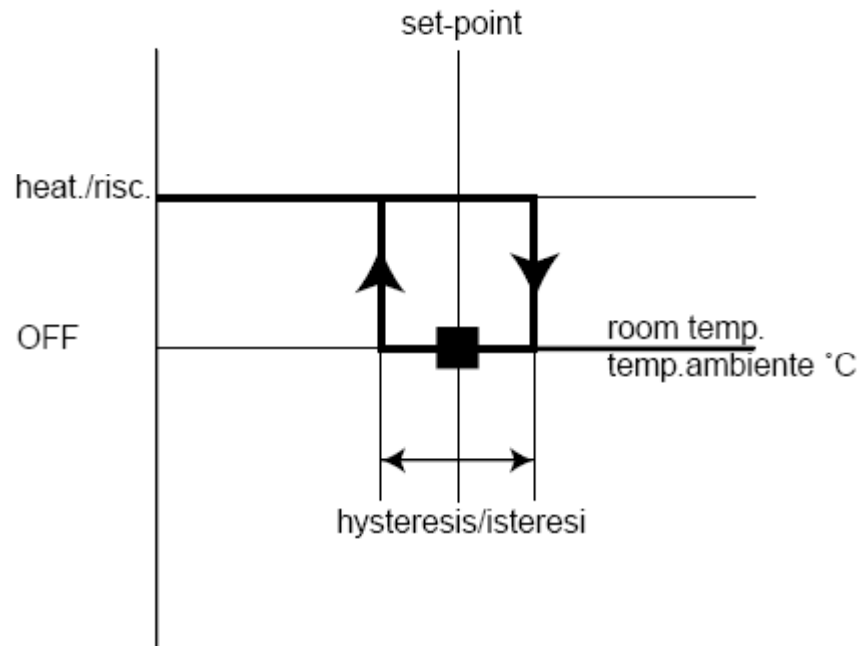
- Temperature regulation-cooling:
- On-off regulation
- According to probe 2 (remote connection) or built-in sensor-selection by dip-switch
- For 2 pipes unit:
  1. Action on water valve
- For 4 pipes units:
  1. Action on cold water valve

**NOTE: VALVE IS STOPPED IF WATER PROBE TEMPERATURE >30°C**

- Value for differential adjustable by dip-switch 1°C or 2°C



# FanCoil Basic: Temperature regulation HEATING-1

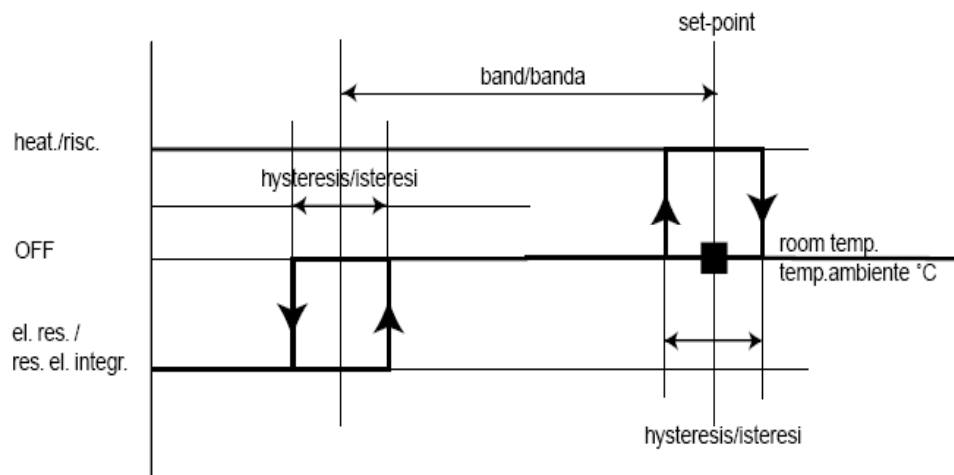


- Temperature regulation-heating:
- On-off regulation
- According to probe 2 (remote connection) or built-in sensor-selection by dip-switch
- For 2 pipes unit:
  1. Action on water valve
  2. Action on electrical heater
- For 4 pipes units:
  1. Action on hot water valve

**NOTE: VALVE IS STOPPED IF WATER PROBE TEMPERATURE <15°C**

Value for differential adjustable by dip-switch 1°C or 2°C

## FanCoil Basic: Temperature regulation HEATING-2



- Temperature regulation-heating:
- For 2 pipes unit only:
  1. Action on water valve+Action on electrical heater
- Electrical heater used as integration

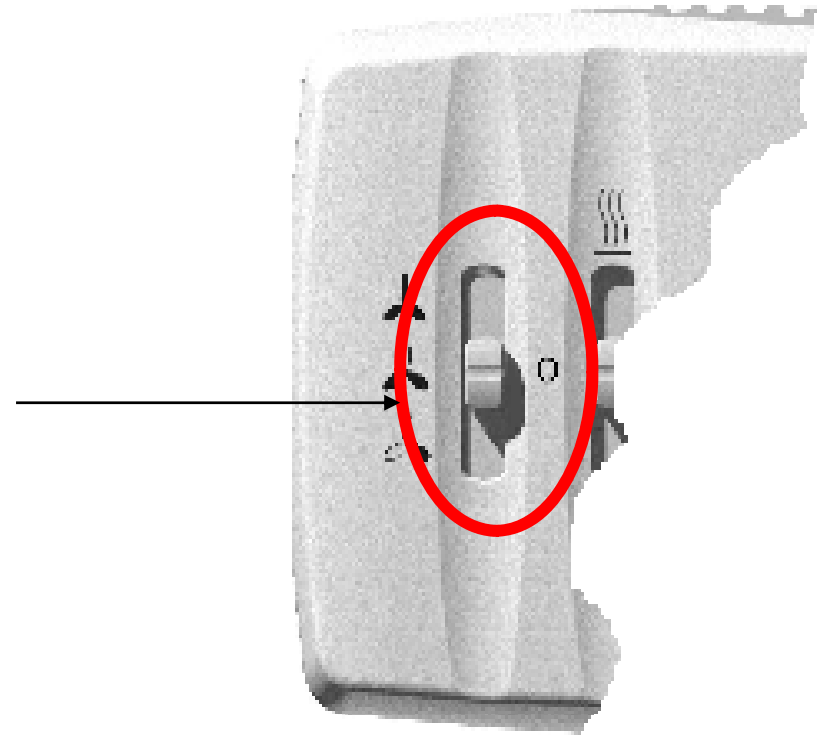
Value for differential adjustable by dip-switch 1°C or 2°C

Value for band

adjustable by dip-switch 2°C or 5°C

## FanCoil Basic: Fan regulation

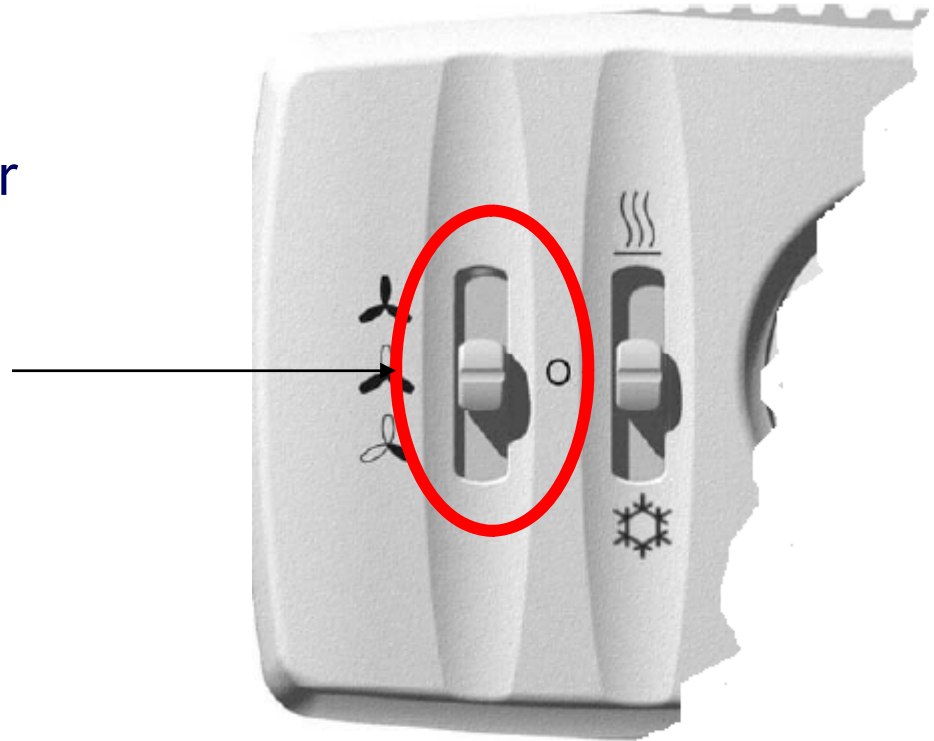
- Fan control:
- Only manual using the slider (min-med-max);
- If water probe is connected  
HotStart: if  $T_{\text{water}} < 30^{\circ}\text{C}$  fan is stopped (avoid cold air)  
TooCool (2 pipes only): if  $T_{\text{water}} > 15^{\circ}\text{C}$  Fan is stopped (avoid hot air)
- If water probe is not connected fan is activated after 2and½ minutes (until hot water is inside the exchanger). SEE DIP SWITCH CONFIGURATION



## FanCoil Basic: Fan regulation

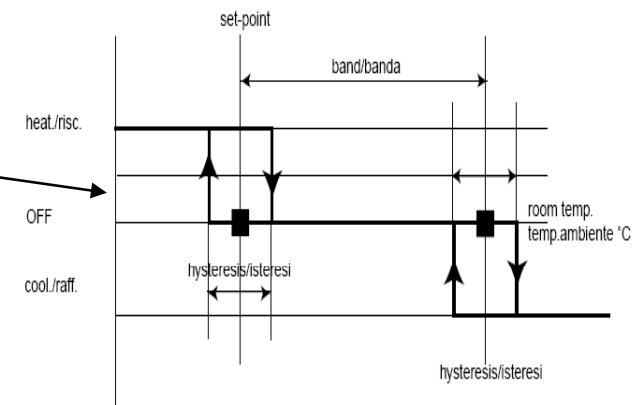
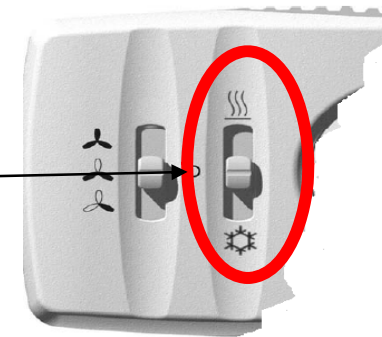
### Fan control-other features:

- Periodical ventilation: if fan does not run on the last 20 minutes it's forced to run for 2 minutes (air recirculation)
- Post ventilation: only for heating mode, when the valve stops fan run for 30" (avoid overheating on the exchanger)
- Dip-switch to select fan always on cooling (also when set point has been reached)



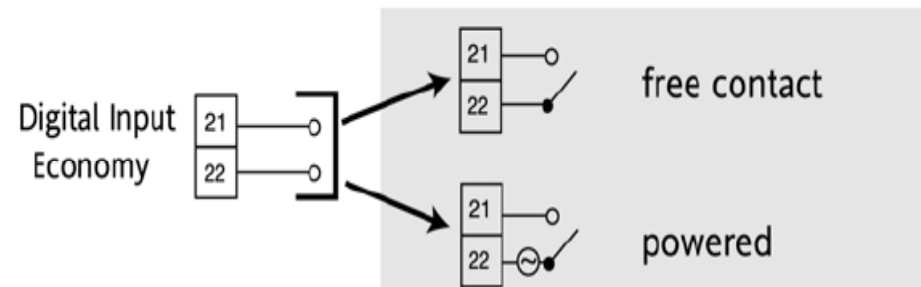
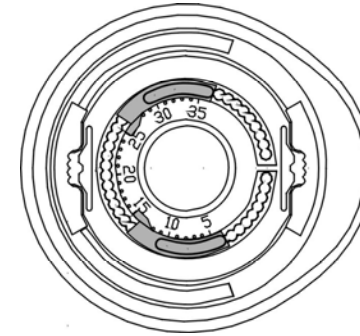
## FanCoil Basic: change over

- Manual: using the slider
- By remote switch connected on ST3 input (only on special models!!!)
- Automatic\* based on ambient temperature for  
2pipes+ElectricalHeater(regulation)  
4pipes
- Automatic\* based water temperature for 2 pipes and 2pipes with ElectricalHeater(integration)  
Twater<15°C→Heating  
Twater>30°C→Cooling



## FanCoil Basic: other features

- Antifreeze protection: if ambient temperature falls under  $8^{\circ}\text{C}$  heating mode is forced
- Setpoint Knob: pegs to reduce-limit or lock setpoint adjustment
- Economy: using the dedicated switch Cooling setpoint is reduced ( $6^{\circ}\text{C}$  less) and heating setpoint increased ( $8^{\circ}\text{C}$  more)
- Window contact: when closed regulation is disabled (simulate window open)-ST3



# FanCoil Plus: Characteristics



2 user interfaces:

1. Setpoint knob (5...35°C) +fan speed-  
Auto+H-C-OFF-Auto
2. Setpoint knob (5...35°C) +fan speed-  
Auto+ON-OFF

Triac output for valves and fan (very low noises during operation), max 230V-0,5A for valves, 230V-1A for fan

Dip no.	Switch	ON	OFF	Description
1			x	floor-mounted device
		x		ceiling-mounted device
2			x	Ventilation on demand (1)
		x		Continuous ventilation (2)
3		x		<i>thermostat control on valve</i>
			x	<i>thermostat control on fan</i>

Dip switch for configuration as indicated in the table

DIP switch no.	4	5	Description
4-5	OFF	OFF	2 pipe device without <i>electric heaters</i>
	OFF	ON	4 pipe device
	ON	OFF	2 pipe device with <i>control electric heaters</i>
	ON	ON	2 pipe device with integrated <i>electric heaters</i>





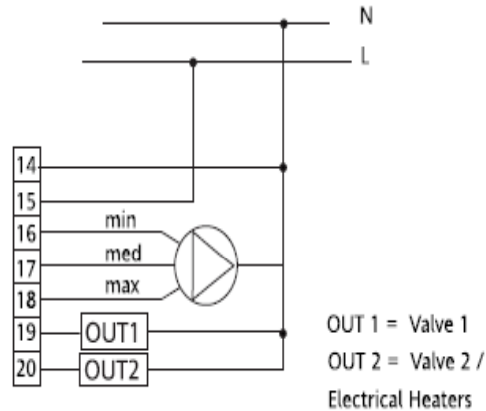
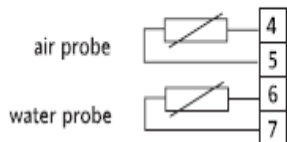
# FanCoil Plus: Characteristics

Indice	Descrizione	Unità di misura	Minimo	Massimo	Valore
1	1 PA00 - Set point Cooling	*C	10,0	50,0	22,0
2	2 PA01 - Set point Heating	*C	10,0	50,0	20,0
3	3 PA02 - Offset set point Cooling/Heating da mai	*C	0,0	15,0	8,0
4	4 PA03 - Isteresi regolatore se sonda interna ter	*C	0,0	10,0	0,4
5	5 PA04 - Isteresi regolatore se sonda remota ter	*C	0,0	10,0	0,4
6	6 PA05 - Set point resistenze integrazione	*C	10,0	100,0	41,0
7	7 PA06 - Isteresi resistenze integrazione	*C	0,0	10,0	2,0
8	8 PA07 - Tempo post-ventilazione con resistenz	Sec	0	255	20
9	9 PA08 - Set point HOT START	*C	10,0	50,0	35,0
10	10 PA09 - Ritardo ON ventilatore-valvola in Heatin	Sec	0	255	60
11	11 PA10 - Tempo OFF ventilazione periodica in H	Min	0	255	10
12	12 PA11 - Tempo OFF ventilazione periodica in H	Min	0	255	10
13	13 PA12 - Tempo OFF ventilazione periodica in C	Min	0	255	10
14	14 PA13 - Tempo ON ventilazione periodica in He	Sec	0	255	30
15	15 PA14 - Tempo ON ventilazione periodica in He	Sec	0	255	30
16	16 PA15 - Tempo ON ventilazione periodica in Co	Sec	0	255	30
17	17 PA16 - Differenziale modo AUTO	*C	0,0	25,0	2,0
18	18 PA17 - Set point TOO COOL	*C	0,0	255,0	25,0
19	19 PA18 - Differenziale ventilazione automatica	*C	0,0	10,0	1,0
20	20 PA19 - Isteresi ventilazione automatica	*C	0,0	10,0	1,0
21	21 PA20 - Ritardo cambio modo AUTO	Min	0	255	30
22	22 PA21 - Offset set point Heating (Soffitto)	*C	0,0	25,0	0,0
23	23 PA22 - Offset sonda remota temp. aria	*C	-12,8	12,7	0,0
24	24 PA23 - Offset sonda temp. acqua	*C	-12,8	12,7	0,0
25	25 PA24 - Offset sonda interna temp.aria	*C	-12,8	12,7	-2,5
26	26 PA25 - Durata ventilazione per cambio modo (	Sec	0	255	30
27	27 PA26 - Set point Economy in Cooling	*C	10,0	50,0	28,0
28	28 PA27 - Set point Economy in Heating	*C	0,0	50,0	14,0
29	29 PA28 - Offset set point in Cooling (pavimento)	*C	-12,8	12,7	-2,0
30	30 PA29 - Indirizzo seriale dispositivo	Numero	0	255	0
31	31 PA43 - Modbus Parity (0= none, 1= even, 2=od	Numero	0	2	1
32	32 n.u. - not used	Numero	0	255	0
33	33 n.u. - not used	Numero	0	255	0
34	34 PA30 - Modo Heat/Cool e On/OFF	Numero	0	255	0
35	35 PA31 - Isteresi Potenzimetro	Numero	0,0	25,5	0,1
36	36 PA32 - Ultima richiesta per gestione delle mod	Numero	0	255	0
37	37 PA33 - Potenzimetro	*C	-3276,8	3276,7	0,0
38	38 PA34 - Modo Locale	Numero	0	255	0
39	39 PA35 - Modo telecomando	Numero	0	255	0
40	40 PA36 - Set telecomando	*C	-3276,8	3276,7	0,0
41	41 PA37 - Set telecomando in Sleep	*C	-3276,8	3276,7	0,0
42	42 PA38 - Set point Heating remoto (BMS)	*C	10,0	50,0	20,0
43	43 PA39 - Set point Cooling remoto (BMS)	*C	10,0	50,0	23,0
44	44 PA40 - Modo/velocita' remoti (BMS)	Numero	0	65535	0
45	45 PA41 - Blocco funzioni locali (BMS)	Numero	0	65535	0
46	46 PA42 - Tempo Bypass Hot Start e Too Cool (o	Min	0	255	10
47	47 PA44 - PCH	Numero	0	65535	0
48	48 PA45 - POLI	Numero	0	65535	0
49	49 PA46 - Polarità ID1	Numero	0	1	0

- Parameters table adjustable by software in the factory
- Flexible according to customer requirements

# FanCoil Plus: Characteristics

FP U320/S - FP U120/S

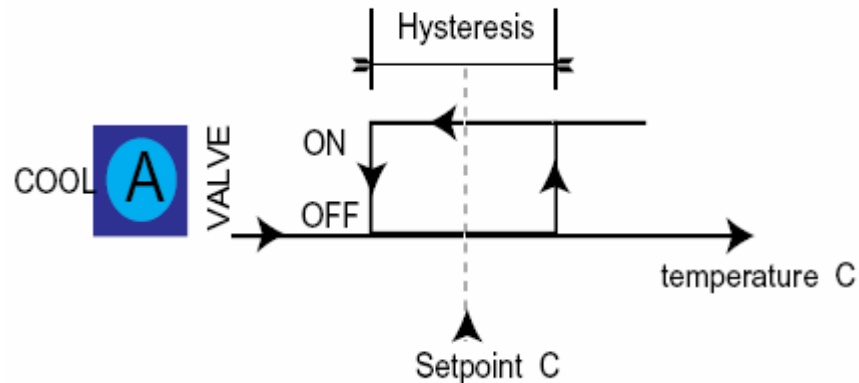


- Universal models adjustable by dip-switch as before indicated. According to the configuration different function of each output:
- 2 pipes
  1. One water valve (H or C)
  2. Electrical heater (adjustable by dip-switch)
- 4 pipes
  1. One water valve for H
  2. One water valve for C

NOTE: Air probe can be remote (connectors 4-5), or local (mounted on board). Automatic selection according to the connection  
**Use DOUBLE INSULATION NTC PROBES ONLY!!!**

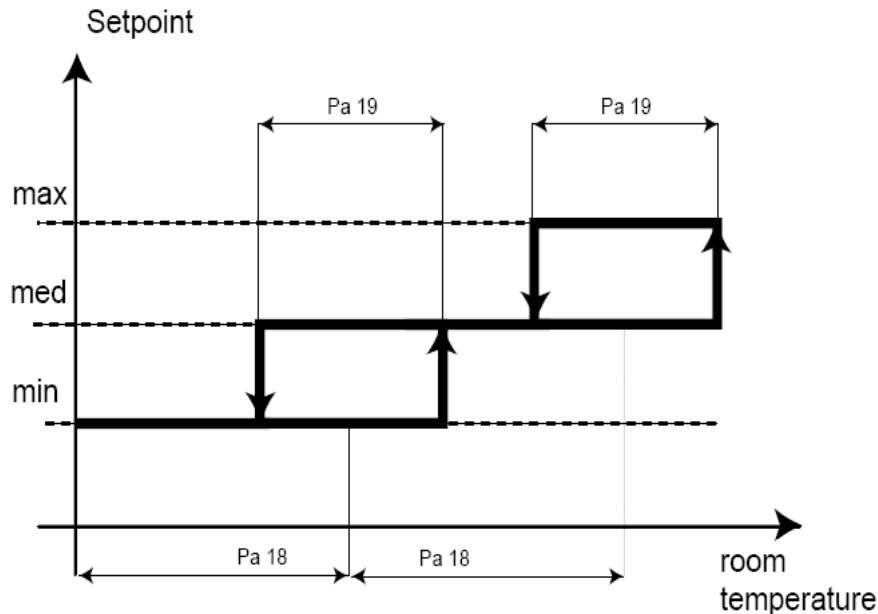
OUTPUTS	2 pipes	2 pipes with <i>electric heaters</i>	4 pipes
OUT1	<i>Heating valve / cooling</i>	Not used	<i>Cooling valve</i>
OUT2	Not used	<i>Electric heaters</i>	<i>Heating valve</i>

# FanCoil Plus: Temperature regulation USING THE VALVES

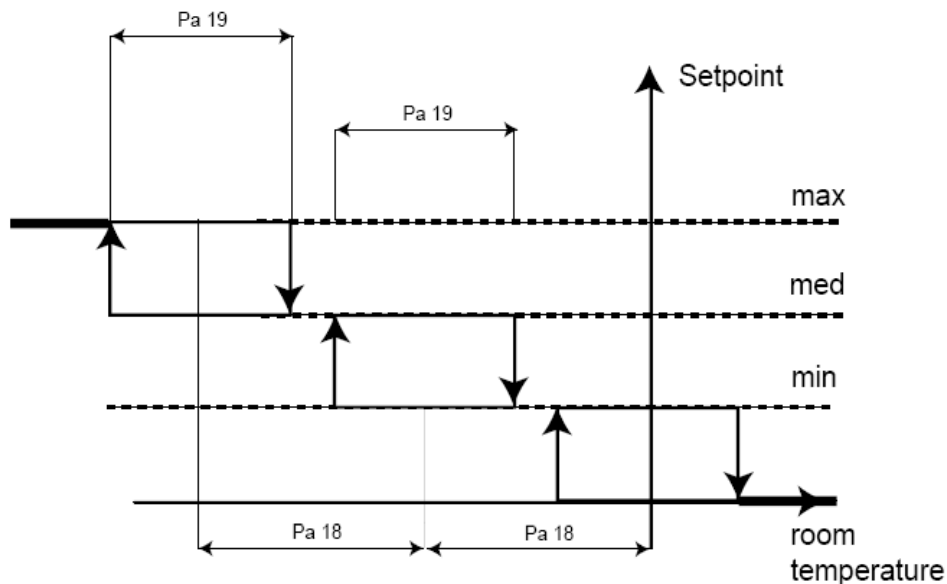
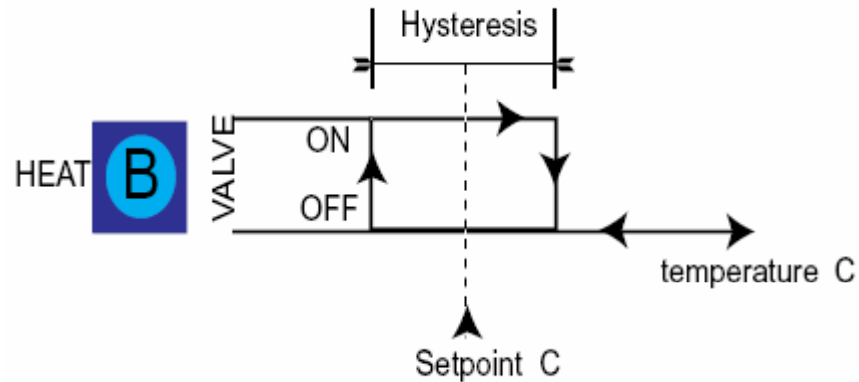


## COOLING

- Valve is switched On-off according to probe 2 (remote connection) or built-in sensor-selection
- If fan slider is in “Auto” position fan speed increase-decrease as shown. NOTE: when setpoint is reached fan run at min speed!
- If fan slider is set at min, med or max it runs at the selected speed



# FanCoil Plus: Temperature regulation USING THE VALVES



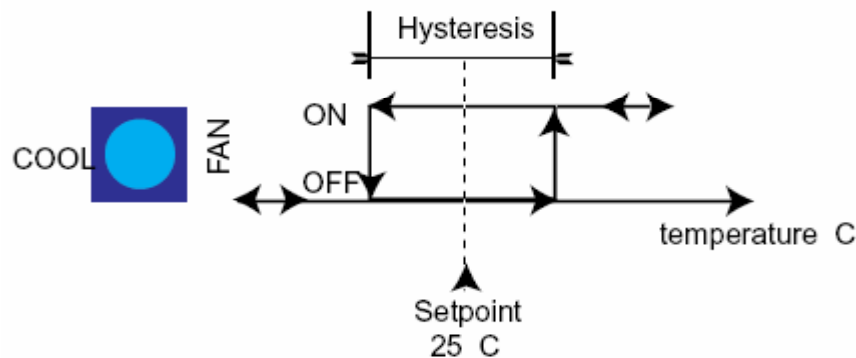
## HEATING

- Valve is switched On-off according to probe 2 (remote connection) or built-in sensor-selection
- If fan slider is in “Auto” position fan speed increase-decrease as shown.  
NOTE: when setpoint is reached fan is stopped! Fan can run at the auto or manual-selected speed ONLY if valve is opened
- If fan slider is set at min, med or max it runs at the selected speed

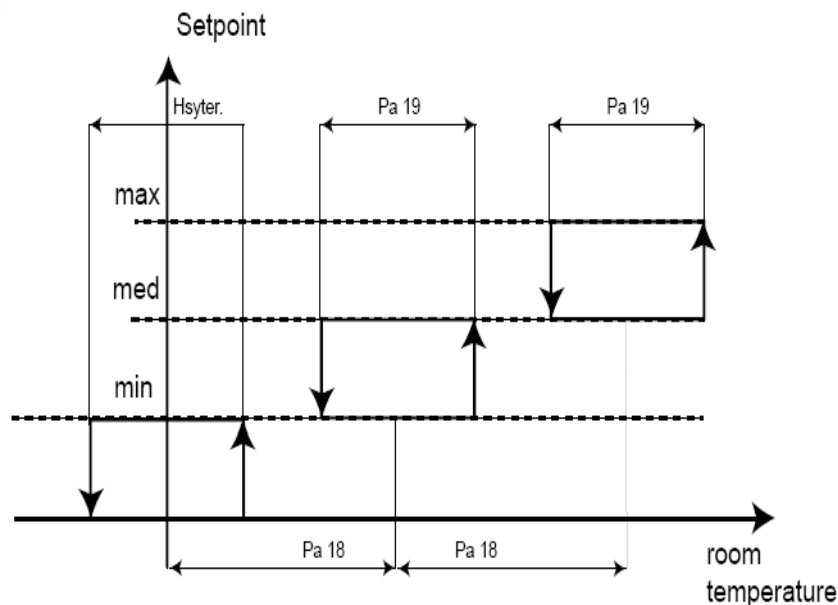
# FanCoil Plus: Temperature regulation USING THE FAN

## COOLING

Fan is switched On-off according to probe 2 (remote connection) or built-in sensor-selection, instead of valve



- If fan slider is set at min, med or max, fan will be switched on-off at the selected speed

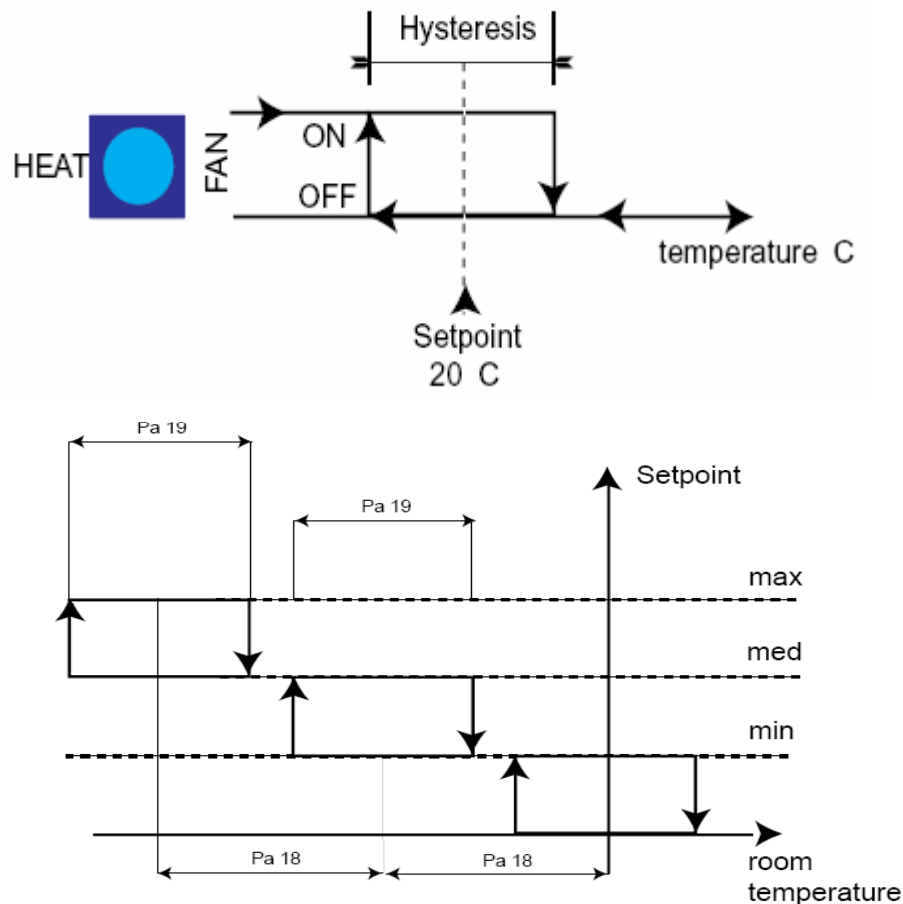


- If fan slider is set on auto speed is increased-decrease as shown

# FanCoil Plus: Temperature regulation USING THE FAN

## HEATING

Fan is switched On-off according to probe 2 (remote connection) or built-in sensor-selection, instead of valve



- If fan slider is set at min, med or max, fan will be switched on-off at the selected speed

- If fan slider is set on auto speed is increased-decrease as shown



## FanCoil Plus: Temperature regulation features

Parameter P50 must be set according to the position of water valve:

**P50=0**, water probe installed downstream from the valve.

HotStart&TooCool stop fan but not valve

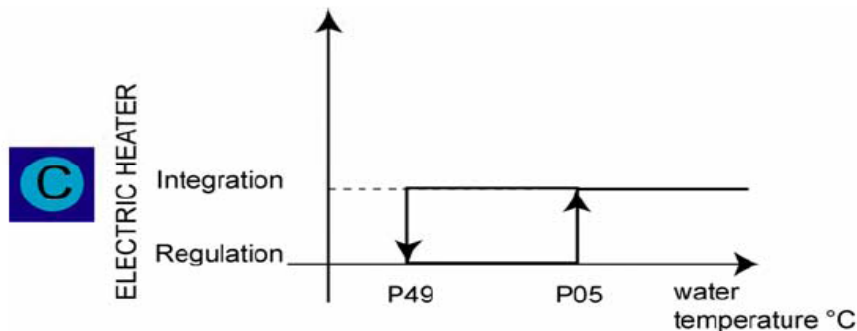
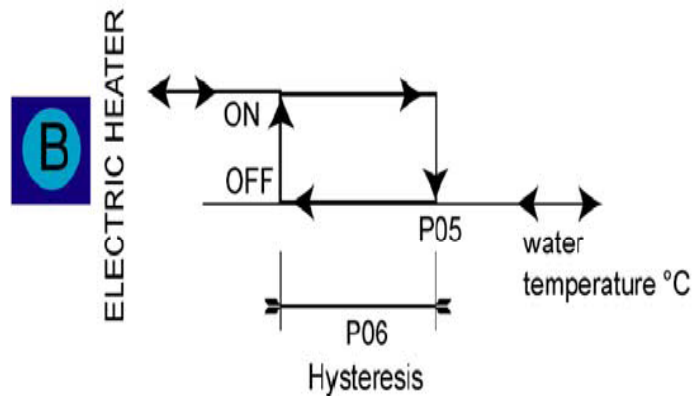
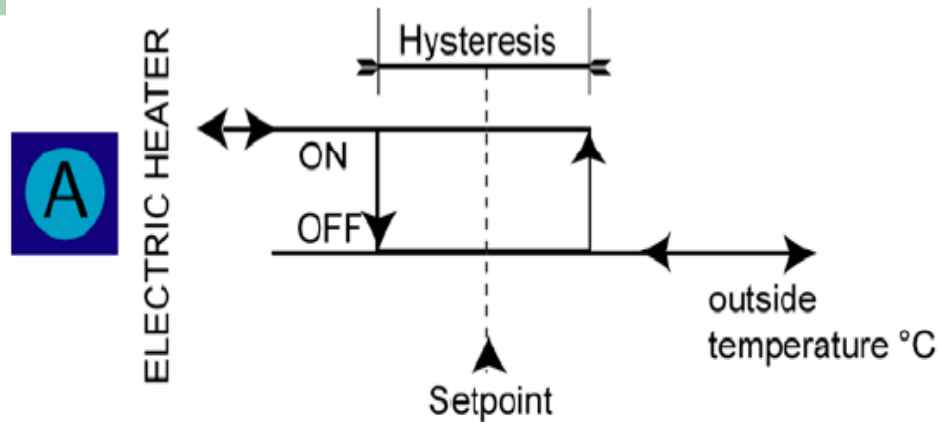
**P50=1**, water probe installed upstream from the valve.

HotStart&TooCool stop valve but not fan

Dip2 has no more effect



# FanCoil Plus: Temperature regulation-ELECTRICAL HEATERS



## IN REGULATION

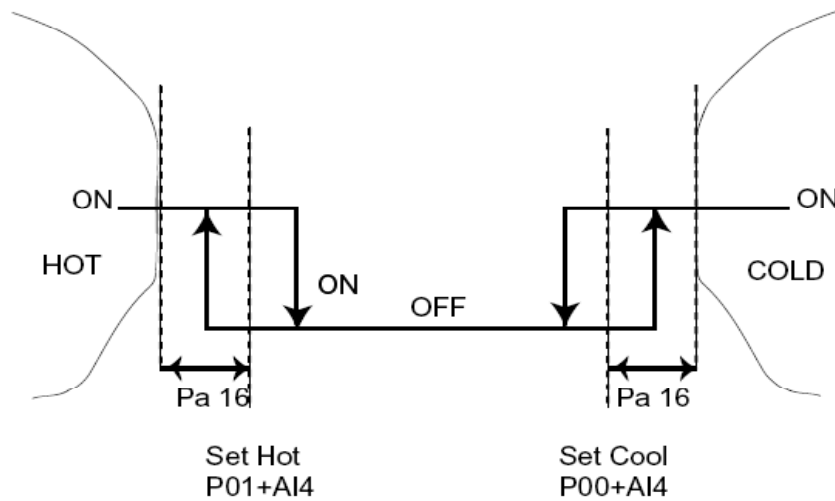
- Electrical heaters are used to heat the ambient instead of hot water, according to the ambient probe

## IN INTEGRATION

- If water temperature falls under P05-P06 heater is activated and helps to heat together with hot water
- If water temperature falls under P49, water valve is closed and heating is made with heaters only

## FanCoil Plus: change over

- Manual: using the slider
- Automatic following the indicated diagram



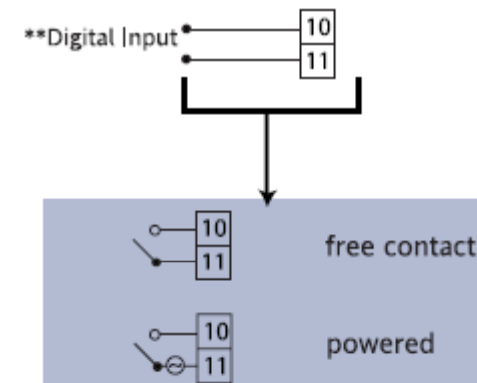
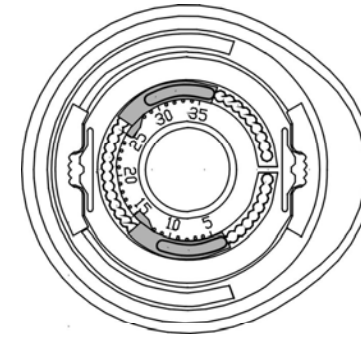
## FanCoil Plus: other features

- If water probe is connected:  
HotStart(2&4pipes) available:  
(H)if  $T_{water} < HotStartSet^{\circ}C$  fan is stopped (avoid cold air)  
TooCool(2pipes only)  
(C)if  $T_{water} > TooCoolSet^{\circ}C$  fan is stopped (avoid hot air)
- Periodical ventilation: if fan does not run an adjustable time,it's activated for adjustable on-off time→avoid air stratification
- Post Ventilation:only for heating mode, when the valve stops fan run for Pa07minutes (avoid overheating on the exchanger)



## FanCoil Plus: other features

- Setpoint Knob: pegs to reduce-limit or lock setpoint adjustment
- Economy: using the dedicated switch Cooling setpoint is moved to Pa27 value and heating setpoint to Pa26 → energy saving
- Window contact: when activated regulation is disabled.  
24Vac: active when closed;  
Voltage free: polarity adjustable
- Setpoint offset: through dip-switch:
  - Floor mounting: increased of Pa28 (setpoint cooling only)
  - Ceiling mounting: reduced of Pa21 (setpoint heating only)





## FanCoil Basicom: Characteristics



- 2 user interfaces:
  1. Setpoint knob (+...-, range adjustable by parameters) +fan speed-Auto+H-C-OFF-Auto
  2. Setpoint knob (+...-, range adjustable by parameters) +fan speed-Auto+ON- OFF

Same functions described for FanCoil Plus

# FanCoil Basicom: Characteristics

Indice	Descrizione	Unità di misura	Minimo	Massimo	Valore
1	1 PA00 - Set point Cooling	*C	10,0	50,0	22,0
2	2 PA01 - Set point Heating	*C	10,0	50,0	20,0
3	3 PA02 - Offset set point Cooling/Heating da ma	*C	0,0	15,0	8,0
4	4 PA03 - Isteresi regolatore se sonda interna ter	*C	0,0	10,0	0,4
5	5 PA04 - Isteresi regolatore se sonda remota ter	*C	0,0	10,0	0,4
6	6 PA05 - Set point resistenze integrazione	*C	10,0	100,0	41,0
7	7 PA06 - Isteresi resistenze integrazione	*C	0,0	10,0	2,0
8	8 PA07 - Tempo post-ventilazione con resistenz	Sec	0	255	20
9	9 PA08 - Set point HOT START	*C	10,0	50,0	35,0
10	10 PA09 - Ritardo ON ventilatore-valvola in Heatir	Sec	0	255	60
11	11 PA10 - Tempo OFF ventilazione periodica in H	Min	0	255	10
12	12 PA11 - Tempo OFF ventilazione periodica in H	Min	0	255	10
13	13 PA12 - Tempo OFF ventilazione periodica in C	Min	0	255	10
14	14 PA13 - Tempo ON ventilazione periodica in He	Sec	0	255	30
15	15 PA14 - Tempo ON ventilazione periodica in He	Sec	0	255	30
16	16 PA15 - Tempo ON ventilazione periodica in Co	Sec	0	255	30
17	17 PA16 - Differenziale modo AUTO	*C	0,0	25,0	2,0
18	18 PA17 - Set point TOO COOL	*C	0,0	255,0	25,0
19	19 PA18 - Differenziale ventilazione automatica	*C	0,0	10,0	1,0
20	20 PA19 - Isteresi ventilazione automatica	*C	0,0	10,0	1,0
21	21 PA20 - Ritardo cambio modo AUTO	Min	0	255	30
22	22 PA21 - Offset set point Heating (Soffitto)	*C	0,0	25,0	0,0
23	23 PA22 - Offset sonda remota temp. aria	*C	-12,8	12,7	0,0
24	24 PA23 - Offset sonda temp. acqua	*C	-12,8	12,7	0,0
25	25 PA24 - Offset sonda interna temp.aria	*C	-12,8	12,7	-2,5
26	26 PA25 - Durata ventilazione per cambio modo (	Sec	0	255	30
27	27 PA26 - Set point Economy in Cooling	*C	10,0	50,0	28,0
28	28 PA27 - Set point Economy in Heating	*C	0,0	50,0	14,0
29	29 PA28 - Offset set point in Cooling (pavimento)	*C	-12,8	12,7	-2,0
30	30 PA29 - Indirizzo seriale dispositivo	Numero	0	255	0
31	31 PA43 - Modbus Parity (0= none, 1= even, 2=od	Numero	0	2	1
32	32 n.u. - not used	Numero	0	255	0
33	33 n.u. - not used	Numero	0	255	0
34	34 PA30 - Modo Heat/Cool e On/OFF	Numero	0	255	0
35	35 PA31 - Isteresi Potenzimetro	Numero	0,0	25,5	0,1
36	36 PA32 - Ultima richiesta per gestione delle mod	Numero	0	255	0
37	37 PA33 - Potenzimetro	*C	-3276,8	3276,7	0,0
38	38 PA34 - Modo Locale	Numero	0	255	0
39	39 PA35 - Modo telecomando	Numero	0	255	0
40	40 PA36 - Set telecomando	*C	-3276,8	3276,7	0,0
41	41 PA37 - Set telecomando in Sleep	*C	-3276,8	3276,7	0,0
42	42 PA38 - Set point Heating remoto (BMS)	*C	10,0	50,0	20,0
43	43 PA39 - Set point Cooling remoto (BMS)	*C	10,0	50,0	23,0
44	44 PA40 - Modo/velocita' remoti (BMS)	Numero	0	65535	0
45	45 PA41 - Blocco funzioni locali (BMS)	Numero	0	65535	0
46	46 PA42 - Tempo Bypass Hot Start e Too Cool (o	Min	0	255	10
47	47 PA44 - PCH	Numero	0	65535	0
48	48 PA45 - POLI	Numero	0	65535	0
49	49 PA46 - Polarità ID1	Numero	0	1	0

- Parameters table adjustable by software in the factory
- Flexible according to customer requirements



## FanCoil Basicom: other features

- Virtual probe:

Supervisory system can simulate the value of the regulation probe: this value will be used to make the regulation instead of the “real” probe → force one or more FanCoil to work on a common temperature.

Timeout to remove automatically this option



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## FanCoil Basicom: Models



1. Televis: compatible with TelevisNet, connection using BusAdapter 350 only
2. Modbus: compatible with common supervisory system using Modbus protocol



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Thanks!

AIR CONDITIONING



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