



AL24A1T

Room controller

Room controller with 0...10 V or 3-point output, primarily intended for control of heating or cooling in zone control systems.

- Setpoint 0...40°C
- Internal or external sensor
- Setting for heating or cooling output

AL24A1T is a room controller for wall mounting. It has 0...10 V or 3-point control signal output. The output is reversible, so the controller can control heating or cooling. The control function can be set to P- or PI-control.

The P-band can be set to 0.5...50 K and the reset time to 2 or 20 minutes.

Sensor

AL24A1T has a built-in temperature sensor.

It is also possible to connect an external sensor to the controller. In this case, the jumper BY1 is set to position External (see description overleaf).

Setpoint

The setpoint is set with the knob on the right side of the housing. The setting can be fixed with a locking screw under the cover.

AL24A1T has an input for change-over that causes the control function to switch between heating or cooling. This input is connected to a closing relay contact. On closed contact the controller works with heating output and on open contact with cooling output.

Setting heating/cooling function

If the external change-over function is not in use, and heating output is desired, a wire must be connected between terminals 7 and 8.

If cooling output function is used, the input is left open.

- 0...10 V or 3-point output
- P- or PI-function
- Adjustable P-band and I-time
- Occupied/Unoccupied mode

Indications

A green LED on the front of the cover indicates supply power on.

Internal indications

The heating/cooling function is indicated by a red LED, marked "H". Red light indicates heating, no light indicates cooling.

There is also an indication for occupancy, a green LED marked "Occ". Green light means occupied mode, no light means unoccupied mode.

Occupied/Unoccupied mode

The setpoint can be adjusted in accordance with an input for occupancy. On open contact, the thermostat setpoint is determined by the setpoint adjuster (occupied mode). On closed contact, the setpoint is determined by an internal trimpot (unoccupied mode).

The base setpoint value for the unoccupied mode is 22°C. It can be reset depending on the setting of the potentiometer "Unoccupied". It is adjustable with a span of +/-6°C. See overleaf under the heading "Function selection".

Technical data

Supply voltage	24 V AC +/- 15% 50...60 Hz
Power consumption	2 VA
Ambient temperature	0...50°C
Storage temperature	-40...+50°C
Ambient humidity	Max 90% RH
Protection class	IP20



This product conforms with the requirements of European EMC standards CENELEC EN 61000-1 and EN 61000-3 and carries the CE mark.

Inputs

External sensor	Regin NTC-sensors, 0...40°C (TG-K340 or TG-R640)
Change-over	Potential-free contact
Occupancy	Potential-free contact

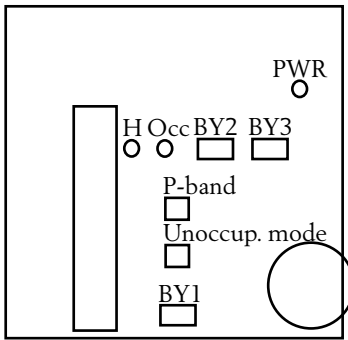
Output

Control signal	0...10 V DC, 1 mA or 3-point 24 V AC, 1 A
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Settings

Setpoint	0...40°C
P-band	0.5...50 K
Reset-time (I-time)	2 or 20 min, set with jumpers, see below
Unoccupied mode	22°C +/- 6°C

Function selection (jumpers) and Indicators



Jumper BY1	Right = Internal sensor (<i>factory setting</i>) Left = External sensor
Jumper BY2	Closed = Reset time (I-time) is 2 min Open = Reset time (I-time) is 20 min (<i>factory setting</i>)

BY2 only has a function when jumper BY3 is set to PI-control.

Jumper BY3	Closed = P-function Open = PI-function (<i>factory setting</i>)
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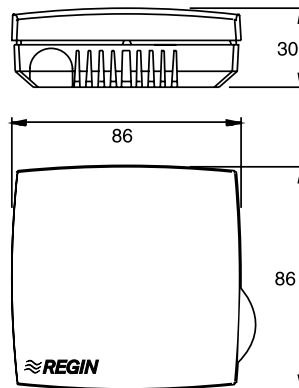
To obtain open position place the jumper on one pin only.

Pot. Unoccupied mode	Position	0	1	2	3	4	5	6
Cooling setp.		22	23	24	25	26	27	28 °C
Heating setp.		22	21	20	19	18	17	16 °C

H (Change-over status)	LED lit = The heating function is active LED not lit = The cooling function is active
Occ (Occupancy status)	LED lit = Occupancy mode LED not lit = Unoccupied mode
PWR	Indicates power on

Wiring and Dimensions

1	Supply voltage 24 V AC
2	System neutral
3	24 V AC (G+) output, for actuator supply
4	3-point output increase
5	3-point output decrease
6	0...10 V DC control output
7	Signal neutral
8	Change-over input (heating function on closing contact)
9	Occupancy input (unoccupied mode on closing contact)
10	External sensor



Measurements in mm.

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THE CHALLENGER IN BUILDING AUTOMATION



CORRIGO R10-Lon is a zone controller with Lon-communication designed for room control. It can control heating and/or cooling actuators.

- * Setpoint 0...30°C
- * Two sensor or digital inputs
- * Heating and cooling output in sequence
- * Triac outputs, one 3-point floating or two thermal actuators
- * Lon Works communication

Function

CORRIGO R10-Lon is a zone controller for wall mounting. It can be run either against the built-in temperature sensor or an external sensor.

Universal outputs

The controller has two outputs that can be set to be either two 0...10 V analogue outputs for heating and cooling or two digital outputs.

In digital mode the outputs can be used either with a 3-point floating control actuator or with two thermal actuators for heating / cooling. When set to digital function each output is controlled by a 24 V triac. When set for analogue, the output is a standard 0...10 V signal for heating or cooling (direct or reverse action).

Universal inputs

The controller has two inputs for either external room sensor, external presence detector or window contact.

Setpoint

The basic setpoint is set via the Lon network, it can be shifted ± 3 K using the knob on the side of the unit.

Indications

There is a red status LED under the cover, steady lightning in normal mode and blinking in bypass mode. Under the cover there is also a service LED for communication status.

LonWorks communication and LonMark

All control parameter settings are done over the Lon network. The communication is in compliance with LonMark guidelines in order to fulfill LonMark certification*.

*) = Chilled ceiling profile

Technical data

Supply voltage	24 V AC +/- 15 %, 50...60 Hz
Power consumption	4 VA
Ambient temperature	0...50°C
Storage temperature	-40...+50°
Ambient humidity	Max 90% RH
Protection class	IP20



This product conforms with the requirements of European EMC standards CENELEC EN 50081-1 and EN 50082-1 and carries the CE mark

Inputs

Universal input 1	NTC-sensor, 0...10 V or digital contact (digital/analogue selected by jumper)
Universal input 2	NTC-sensor or digital contact (digital/analogue selected by jumper)

Outputs

Universal output 1	Analogue 0...10 V DC, 1 mA, or 24 V triac on/off (digital/analogue selected by jumper)
Universal output 2	Analogue 0...10 V DC, 1 mA, or 24 V triac on/off (digital/analogue selected by jumper)

Settings

Setpoint (knob on contr.)	± 3 K
Setpoint (basic setpoint)	0...30°C, is set via network variables
P-band	Is set via network variables
I-time	1..20 min, is set via network variables
NZ (neutral zone)	0...3 K, is set via network variables

Indications

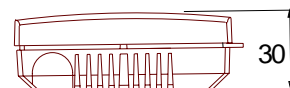
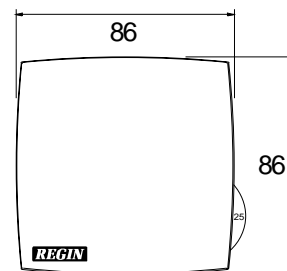
Service LED	Red LED under the cover for indication of communication and processor status.
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LonWorks network variables

See separate leaflet

Wiring and dimensions

1	Supply 24 V AC
2	System neutral 24 V AC
3	Universal output 1
4	Universal output 2
5	Signal neutral
6	Universal input 1
7	Universal input 2
8	Lon Net A
9	Lon Net B
10	Ground



System neutral 24 V AC
and signal neutral are
internally connected

IMPROVING INDOOR CLIMATE CONTROL WORLDWIDE

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AL24A1K is a controller intended for duct mounting with built-in sensor and 0...10V output. Designed primarily for control of heating or cooling in HVAC-systems.

- * Setpoint 0...30° C is set under the cover
- * Change-over function
- * Heating or cooling output
- * Input for external setpoint or SPC
- * Adjustable P-band and selectable I-time
- * P or PI-function

Function

AL24A1K is a compact controller for duct-mounting with built-in sensor and one 0...10 V output. It is intended for control of heating or cooling in ventilation and airhandling systems. It can be set to P- or PI-control and has an input for seasonal change-over between heating and cooling. The P-Band is adjustable 0,5...50 K and the I-time can be set by a function switch in 2 or 20 minutes steps.

Sensor

The controller has a built-in sensor inside the top of the probe.

Setpoint

The setpoint is set by the potentiometer placed under the cover. An external setpoint device can be connected to the controller. See overleaf.

Change-over

AL24A1K has input for change-over, that causes the control function to switch between heating or cooling. This input can be connected to a REGIN NTC-sensor or an closing relay contact.

On closed contact the controller works with heating output and on open contact with cooling.

When using sensor for change-over, the temperature range must be 0...30°C and the sensor mounted on the

supply to the battery in order to give accurate temperature values.

When the temperature at the sensor exceeds 22°C, the output function is switched to heating and when the temperature falls below 18°C the output is set to cooling.

SPC (SetPoint Control)

The setpoint can be remote-controlled by an external signal, 0...10 V. At 5 V input the SPCsignal gives no change, higher voltage raises and lower voltage lowers the setpoint. The setpoint shift +/-15 K corresponds to the input signal shift of +/- 5 V.

If the SPC is not in use the input is left open. SPC can only be used with internal setpoint.

Setting heating/cooling function

If the external change-over function is not in use, and heating output is desired, a wire must be connected between terminals 7 and 8.

If using cooling output, the input is left open.

Indication

AL24A1K has a red LED for output indication. The light intensity varies according to the output voltage level. It has an LED pair for indication of output function. Green LED indicates that the output is set to cooling and the red one indicates that the output is set to heating.

Technical data

Supply voltage	24 V AC +/- 15 % 50-60 Hz
Power consumption	2VA
Ambient temperature	0...50°C
Storage temperature	-40...+50°C
Ambient humidity	Max 90% RH
Protection class	IP65



This product conforms with the requirements of European EMC standards CENELEC EN 50081-1 and EN 50082-1 and carries the CE mark

Input

External setpoint/SPC	One input for external setpoint or for setpoint displacement (SPC) using an external potentiometer or a 0...10 V DC signal
Change-over function	For Regin NTC sensor, i e TG-A130, or potential-free closing contact

Output

Control signal	One, 0...10 V DC, 1 mA
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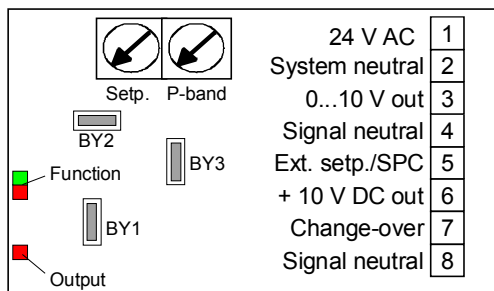
Settings

Setpoint	0...30°C, is set by means of the potentiometer under the cover
Proportional band	0.5...50K
Reset time (I-time)	2 or 20 minutes, is set by jumpers, see below

Indications

Output indication	Red LED, proportional intensity according to the output voltage level
Output function indication	Green LED for cooling control and a red LED for heating control

Jumpers



Jumper BY1 Closed = I-time is 2 minutes (*delivery setting*)
Open = I-time is 20 minutes

Only active if jumper BY2 is set to PI-control

Jumper BY2 Closed = P-control
Open = PI-control (*delivery setting*)

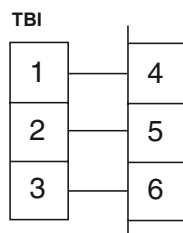
Jumper BY3 Closed = Internal setpoint and SPC (*delivery setting*)
Open = External setpoint

To obtain open position place the jumper on one pin only.

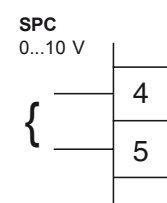
Wiring and dimensions

1	Supply 24 V AC
2	System neutral 24 V AC
3	Output 0-10 V
4	Signal neutral
5	External setpoint/SPC
6	+ 10 V DC
7	Change-over
8	Signal neutral

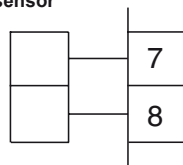
External setpoint with setpoint device TBI-30



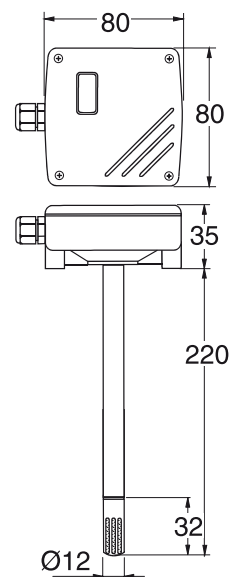
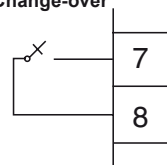
External SPC signal



Change-over sensor



Switch for Change-over



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REGIN

THE CHALLENGER IN BUILDING AUTOMATION



AQUA24T/ AQUA230T are controllers in the AQUALINE series intended for controlling HVAC systems. The controllers are primarily intended for control of supply air temperature or for room temperature control.

- * One three point floating control output, 24 V AC
- * Supply voltage 24 or 230 V AC
- * For heating or cooling applications
- * For controlling damper actuators or valve actuators
- * For wall mounting
- * External sensor and/or setpoint input

Function

The AQUA24/230T controls three-point (floating control) actuators with a pulse-pause signal where the ratio between on-time and off-time is proportional to the temperature offset.

Small offset will give short on-time pulses and longer off-time. Larger offset will give longer on-time and shorter off-time. A 20K offset will give continuous on-time. The total pulse-period is constant 4 seconds.

Built-in or external sensor

The controller has a built-in sensor which can be used as a main sensor for room temperature control. It also has an input for connecting an external sensor. Even external setpoint can be connected.

Concealed setting

The standard version is supplied with a sliding, transparent cover over the setpoint knob. A cover of the same colour as the controller can be supplied to conceal the setpoint knob if this is required.

Single sensor control

For supply air temperature control or room temperature control without limiting function. The main sensor can be either built-in or can be an external sensor.

Cascade control of room temperature

The controller can be set for cascade control. The built-in or external sensor is used as main sensor placed in the room or in the exhaust air duct. A second sensor is placed in the supply air duct to control the supply air temperature.

If the room temperature deviates from the setpoint value the supply air temperature setpoint is changed. The degree of compensation is set by the cascade factor CF. The cascade factor is defined as the shift in duct temperature setpoint for 1°C room temperature change.

It is possible to set a minimum limit for the temperature of the supply air.

Typical applications

Individual room control of valve or damper actuators in hotels, offices, conference rooms etc. For heating or cooling applications.

Models

AQUA24T	Room controller, supply voltage 24 V AC
AQUA230T	Room controller, supply voltage 230 V AC

Technical data

General

Supply voltage	AQUA24T: 24 V AC +/-10% 50-60Hz. AQUA230T: 230 V AC +/-10% 50-60 Hz.
Power consumption	Max 5 VA.
Fuse on PC board	500 mA (AQUA24T only)
Ambient temperature	0...50°C
Storage temperature	-40...50°C.
Ambient humidity	Max 90%RH.
Dimension	82x135x38 mm.
Form of protection	IP20.
Mounting	Two holes (c:c 60mm) to fit over wallbox
CE	This product conforms with the requirements of European EMC standards CENELEC EN50081-1 and EN50082-1 and European LVD standard IEC669-1 and IEC669-1 and carries the CE mark.

Inputs

Sensor inputs	Two (2) inputs for main sensor and limiting sensor. See section 6-100 for choice of sensor.
Setpoint input	The setpoint can be set with an external setpoint potentiometer.
Night set-back	3°C via external time switch.

Outputs

Control signal	Three-point (floating control) output 24V AC (heating or cooling). Maximum load AQUA24T: 7VA and AQUA230T: 3VA
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Setting Options

Setpoint	0...30°C	
Cascade factor(CF)	1...15	Must be set to 1 for single sensor control
Minimum limit (Min)	0...30°C	Not active in single sensor control

Function switches



Single sensor control
N.B. CF must be set at 1.



Built in main sensor and setpoint



Cascade controlling by means of two sensors.



External main sensor, built in setpoint



External main sensor and setpoint

Wiring

AQUA24T

1	24V AC in	Supply-voltage
2	Neutral	
3	Output common	
4	Signal neutral	
5	Main sensor	
6	Night set back	
7	Limit sensor	
8	Y2 output decrease	
9	Y1 output increase	

AQUA230T

1	230V AC in	Supply-voltage
2	Neutral	
3	Output common	
4	Signal neutral	
5	Main sensor	
6	Night set back	
7	Limit sensor	
8	Y2 output, Decrease	
9	Y1 output, Increase	

The actuator common pole wire must be connected to terminal 3 on the controller.

The output on terminal 8 is active on decreasing heat demand (increased cooling).

The output on terminal 9 is active on increasing heat demand (decreased cooling).

FOR INDOOR CLIMATE WITH OPTIMUM CONTROL

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AQUA24TF is a controller in the AQUALINE series intended for controlling HVAC systems. The controller is primarily intended for control of supply air temperature or room temperature control.

- * One three point floating control output, 24 V AC
- * Active frost protection and shutdown function
- * For heating applications
- * Night set-back
- * For wall mounting
- * Internal or external setpoint

Function

The AQUA24TF controls three-point (floating control) actuators with a pulse-pause signal where the ratio between on-time and off-time is proportional to the temperature offset. Small offset will give short on-time pulses and longer off-time. Larger offset will give longer on-time and shorter off-time. A 20K offset will give continuous on-time. The total pulse-period is constant 4 seconds.

External sensor or setpoint

The controller has an input for connecting an external sensor. Even external setpoint can be connected.

Single sensor control

For supply air temperature control or room temperature control without limiting function.

Cascade control of room temperature

The controller can be set for cascade control. The main sensor is placed in the room or in the exhaust air duct. A second sensor is placed in the supply air duct to control the supply air temperature. If the room temperature deviates from the setpoint value the supply air temperature setpoint is changed. The degree of compensation is set by the cascade factor CF. The cascade factor is defined as the shift in duct temperature setpoint for 1°C room temperature change. It is possible to set a minimum limit for the temperature of the supply air.

Night set-back

Fixed 3K on potential-free closing from an external switch.

Frost protection function

The frost protection sensor must be located in a suitable position, either as an immersion sensor in the heater or as a strap-on sensor on the return line. If the temperature at the frost protection sensor falls below 10°C, the frost protection controller will start forcing the water-valve open. If the temperature at the frost protection sensor falls below 5°C, both alarm relays trip and the alarm LED comes on. The frost protection is reset using the reset button on the controller or by cutting the power to the unit for a moment.

Shutdown mode

AQUA24TF has a special input that is wired to the fan motor relay. When the fan is shut off the controller will go into shutdown mode. It will then try to hold the frost protection sensor at 25°C. The advantage with this is that a warm heater minimizes the risk of freezing and also eliminates the discomfort of a cold air blast on startup.

Typical applications

Heating coils (valve actuators), dampers, air handling systems.

Technical data

General

Supply voltage	24 V AC +/-10% 50-60Hz
Power consumption	Max 5 VA
Ambient temperature	0...50°C
Storage temperature	-40...50°C
Ambient humidity	Max 90%RH
Form of protection	IP20
Size	92 x 150 x 45 mm
Mounting	Wall mounting

This product conforms with the requirements of European EMC standards CENELEC EN50081-1 and EN50082-1 and European LVD standard IEC669-1 and IEC669-1 and carries the CE mark.

Inputs

Sensor inputs	Three (3) inputs for main sensor, limiting sensor and frost protection sensor. See section 6-100 for choice of sensor.
Setpoint input	The setpoint can be set with an external setpoint potentiometer.
Night set-back	
Shutdown signal	The fan supervision signal controls the switching between running and shutdown mode. The contact should be closed when the fan is running.

Outputs

Control signal	Three-point (floating control) output 24V AC (heating). Maximum load 7 VA .
Fan relay	Frost protection relay contact max 230 V, 2A. To stop fan on risk of freezing.
Alarm	Frost protection relay contact, max 24 V, 2A. For external frost alarm indication.
Reset frost alarm	Reset button on the front of the controller.

Settings

Setpoint	0...30°C
Cascade factor (CF)	1...15 Must be set to 1 for single sensor control
Minimum limit (Min)	0...30°C Not active in single sensor control

Function switches



Single sensor control

Note CF must be set at 1



Cascade controlling



Internal main sensor and setpoint

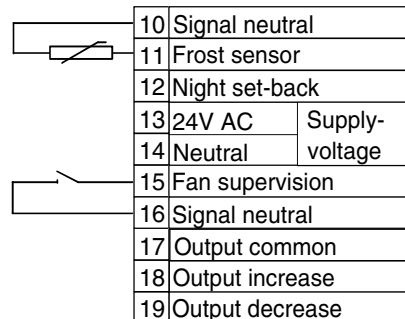
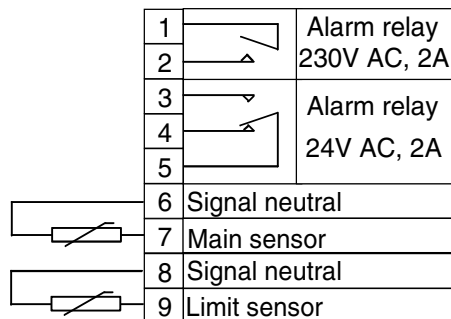


External main sensor and internal setpoint



External main sensor and external setpoint

Wiring



The common terminal on the actuator must be connected to output common, terminal 17, on the controller. Terminal 18 is active on increasing heat demand and terminal 19 is active on decreasing heat demand.

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