

# OJ Air AHU control system



## AHC-3000-T

- Simple and scalable
- Free OJ Air Cloud®
- Touch Screens
- BasicBMS and remote units
- Modbus TCP/IP and RTU
- QuickPlug™ modbus

**AHC-3000-T is a simple and scalable control for decentralised and compact ventilation systems and is used together with intuitive colour touch screens.**

**AHC-3000-T is pre-programmed with everything that is needed for control of the fans and regulation of temperature. The product is complete and ready for use with built-in energy efficiency and monitoring during operation.**

**The operation of AHC-3000-T can be monitored and optimised with OJ Air Cloud®, BasicBMS or BMS modbus interface. Everything is built-in as standard and ready to use.**

### **Simple and scalable**

The standard configuration is simple control of two fans and heat recovery with a 0-10V signal. Pre-programmed options and automatic configuration with QuickPlug™ modbus components make it easy to fulfil a clients needs for more advanced fan regulation, filter monitoring or temperature regulation with a 0-10V controlled heating and/or cooling surface.

### **Free OJ Air Cloud®**

When AHC-3000 is connected to the internet the user has free access to central monitoring and optimisation of the operation from a personal OJ Air Cloud® account. Access can be shared with others, e.g. a service partner for quick and effective service.

### **BasicBMS and remote units**

In buildings with decentralised ventilation there are many ventilation systems to service and maybe several in the same room. With BasicBMS 25 rooms can easily be monitored from a common 3.5" panel, and the satellite function automatically coordinates the operation of 14 remote units in every single room.

## Built-in functions

### Air change

The fans are controlled as standard with a 0-10V signal and can be set to 3 different set points in %.

The volumetric flow rate of air is shown in m<sup>3</sup>/h, l/s or CFM.

### Temperature

Supply air temperature can be set from 5 to 40°C.

Room and extract air temperature can be set from 5 to 40°C. Temperature can be displayed as °C or °F.

### Timer operation and calendar

The built-in timer and weekly program can automatically change the fan set point 6 times a day with individual settings each day of the week.

Exceptions like e.g. vacation periods and holidays are set in the calendar function, which can handle 10 different time periods or repetitions.

### PIR input

Used when a connected PIR sensor needs to automatically start or increase ventilation when there are people present.

### Start input

Used if the fan needs to be started manually with a switch.

### Summer/Winter input

Used for control of the combination heating/cooling coil if there is e.g. a central heating pump in the building which produces heat in the winter and cooling in the summer.

### Summer nights cooling

The function automatically reduces the heat in the building with cold outside air during the night thereby resulting in increased comfort with low energy use.

### Free cooling

The function automatically utilises cold outside air for energy effective cooling.

### Fire & Smoke

The fans can be stopped by a smoke detector in the duct system. If there is a fire, the fans are individually controlled to a pre-installed set point in the range 0 to 100%.

### Languages

Danish, Norwegian, Swedish, English, Russian, Finnish  
German, Dutch, Polish, French, Italian, Spanish.

## Pre-programmed applications

### Extract air fan

#### Options

##### Fan regulation

- Pressure set point up to 2500 Pa
- CO<sub>2</sub> set point up to 2000 ppm
- Moisture set point up to 100 %RH.
- Air flow set point up to 100,000m<sup>3</sup>/h

##### Filter

- Filter monitored with timer
- Filter monitored with pressure switch
- Filter monitored with pressure measurement

##### Energy

- Display of fan power consumption
- Measurement of air flow rate

## Supply Air Unit

#### Options

##### Fan regulation

- Pressure set point up to 2500 Pa
- CO<sub>2</sub> set point up to 2000 ppm
- Moisture set point up to 100 %RH.
- Air flow set point up to 100,000m<sup>3</sup>/h

##### Temperature regulation

- Constant supply air temperature
- Constant room temperature

##### Heating/cooling coils

- Electrical heating coil
- or water heating coil
  - Capillary tube frost protection
  - Return water frost protection
- and/or water cooling coil
- or combination water heating/cooling coil
  - Capillary tube frost protection
  - Return water frost protection

##### Filter

- Filter monitored with timer
- Filter monitored with pressure switch
- Filter monitored with pressure measurement

##### Energy

- Display of fan power consumption
- Measurement of air flow rate

## Rotor exchanger AHU

The rotor exchanger is controlled as standard with 0-10V signal and is used both for heating and cooling recovery.

### Options

#### Fan regulation

- The same as supply Air Unit
- The extraction air fan set point corresponds to the supply air flow rate.
- The supply air fan set point corresponds to the extraction air flow rate.

#### Temperature regulation

- Constant supply air temperature
- Constant extract air temperature
- Constant room temperature

#### Heating/cooling coils

- The same as supply Air Unit

#### Filter

- The same as supply Air Unit

#### Summer nights cooling

- Outside temperature transmitter
- Room temperature transmitter

#### Energy

- Display of extraction fan power consumption
- Display of supply fan power consumption
- Display of rotor exchanger power consumption

## Counter flow heat exchanger AHU

The counter flow heat exchanger is controlled as standard with a 0-10V signal to a by-pass damper mounted in the by-pass duct from fresh air to supply air and is used both for heating and cooling recovery. The exchanger is protected as standard against icing up by overriding the by-pass damper at low exhaust temperature.

### Options

- The same as the rotor exchanger AHU
- Protection against icing by pressure measurement across heat exchanger

## Cross exchanger AHU

The same functions as the counter flow heat exchanger AHU

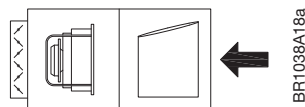
## Mixed air AHU

The mixing dampers are controlled as standard with a 0-10V signal. Mixed air is used both for heating and cooling recovery.

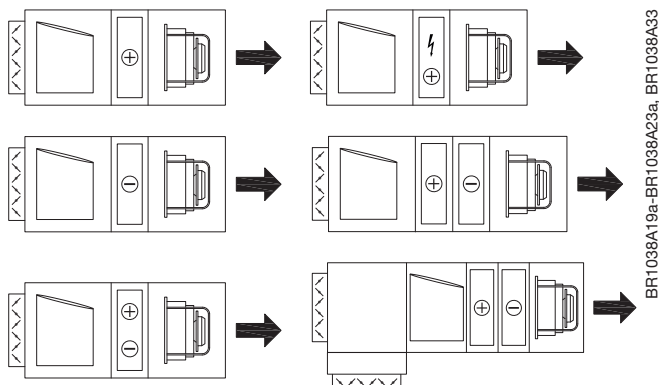
### Options

- The same as the rotor exchanger AHU

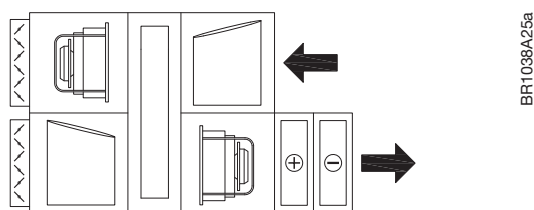
Extract air fan



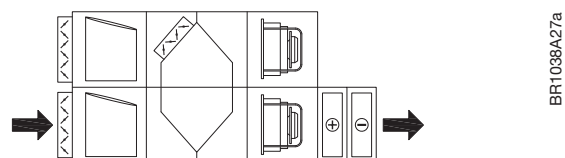
Supply Air Unit



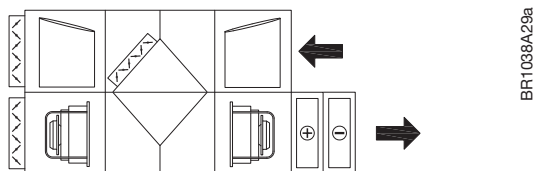
Rotor exchanger AHU



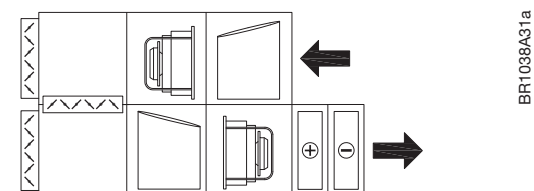
Counter flow heat exchanger AHU

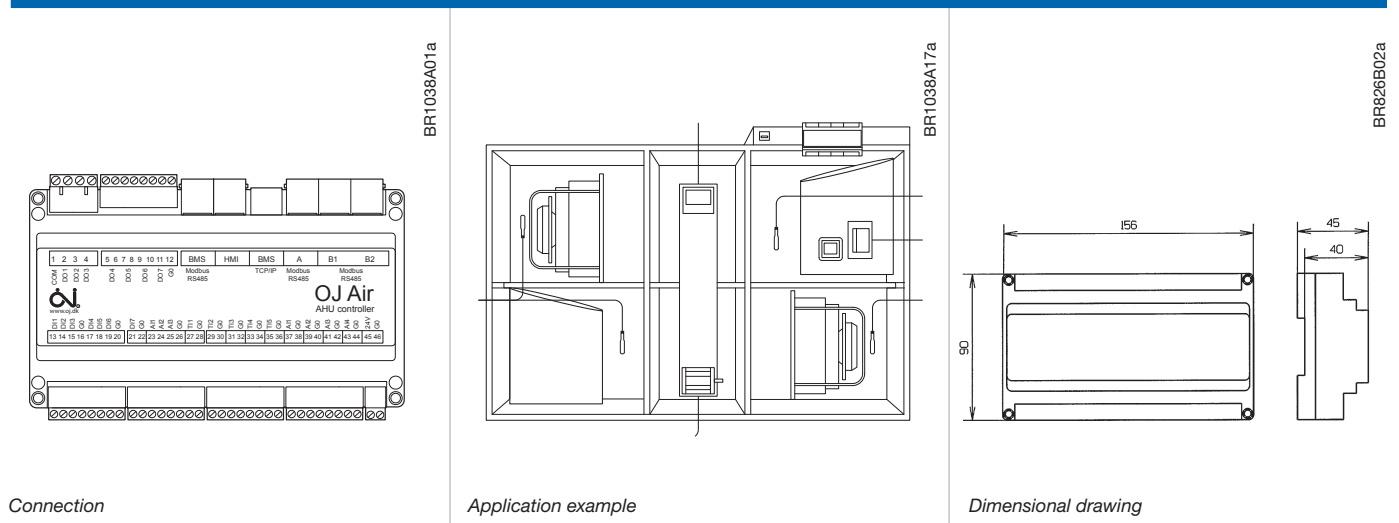


Cross exchanger AHU



Mixed air AHU





Connection

Application example

Dimensional drawing

## INSTALLATION

### Installation of the control

AHC-3000-T is mounted on 35mm DIN rails in an enclosure, which corresponds to the installation locations classification. The control is to be supplied with 24 V AC or 24 V DC.

### Cable connections

Cables are connected by screw terminals and may max. be 4mm<sup>2</sup> on terminals 1 to 4. Other terminals max. 1.5 mm<sup>2</sup>. OJ Air Cloud® or any BMS system is connected with a LAN cable in the controller's RJ45 socket. A BMS system connects to a modbus RTU with a twisted pair cable which is mounted on a RJ-12 socket, or via an OJ-Air2Split cable adapter.

### PRODUCT PROGRAM

Type	Product
AHC-3000-S	OJ-Air AHU control standard
AHC-3000-T	OJ-Air AHU control TCP/IP
AHC-3000-B	OJ-Air AHU control <b>Bluetooth</b> ®
AHC-CONNECT-K1	OJ-Air Mating connector kit
AHC-3000-HMI-35T	OJ-Air Touch HMI 3.5 inch
OJ-Air2-HMI-20T	OJ-Air2 Touch Screen
PTH-3202	Pressure transmitter
PTH-6202	QuickPlug™ pressure transmitter
PTH-6202-2	QuickPlug™ dual pressure transmitter
VTH-6202	QuickPlug™ VOC transmitter
HTH-6202	QuickPlug™ humidity transmitter
TTH-6040-W	QuickPlug™ room temperature transmitter
TTH-6040-O	QuickPlug™ outside temperature transmitter
OJ-Air2Ext	QuickPlug™ I/O add-on module
OJ-DV	QuickPlug™ Motor control for fans
OJ-DRHX	QuickPlug™ Motor control for rotor heat recovery
ETF-xx98	PT-1000 temperature sensor
ETF-xx22/44	NTC 12K temperature sensor
OJ-Air2PWR80	230 V to 2 x 24 V AC transformer
OJ-AIR2SPLIT	Cable adapter

### TECHNICAL DATA

Supply voltage	24 V AC ±10%, 24V DC ±1V
Unit consumption	2 VA @24V AC, 1W @24V DC
Max. consumption	25 VA @24V AC, 11W @24V DC
Electrical connection	Screw terminals 1 – 4: Max. 4mm <sup>2</sup> Screw terminals 5 - 46: Max. 1.5mm <sup>2</sup>
OJ Air Cloud®	Via TCP/IP port Via PC service tool
BMS protocols	Modbus TCP/IP Modbus RTU
TCP/IP port	10/100Mbit Ethernet, RJ45 socket
Modbus RS485 port	5 x RJ12 (6P6C)
Digital inputs	7 x internal pull-up 3 x potential free contact relay, 230 V AC 3A/ 24 V DC 3 A,
Digital outputs	3 x potential free contact relay, 24 V AC/DC 3A 1 x solid state connected to G0 24 V AC/DC 1A
Analogue inputs	3 x 0-10V
Analogue outputs	4 x 0-10V
Sensor inputs	5 x PT-1000 / NTC 12K
Ambient temperature, operation	-40/+50°C
Ambient temperature, storage	-50/+70°C
Dimensions	156 x 96 x 45 mm
Enclosure	IP20, ABS
Weight	250 g

### CE marking

AHC-3000-T complies with the requirements of the following directives:

The EMC directive EN-61000-6-2 EN-61000-6-3	The low voltage directive EN 60730-1
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