RDT940 application manual

SAUTER flexHVACvision

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The applications described below are implemented in the RDT940 controllers.
They can be easily parameterized also without using a computer.

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1.1 Application 901

1.1.1 Operation description

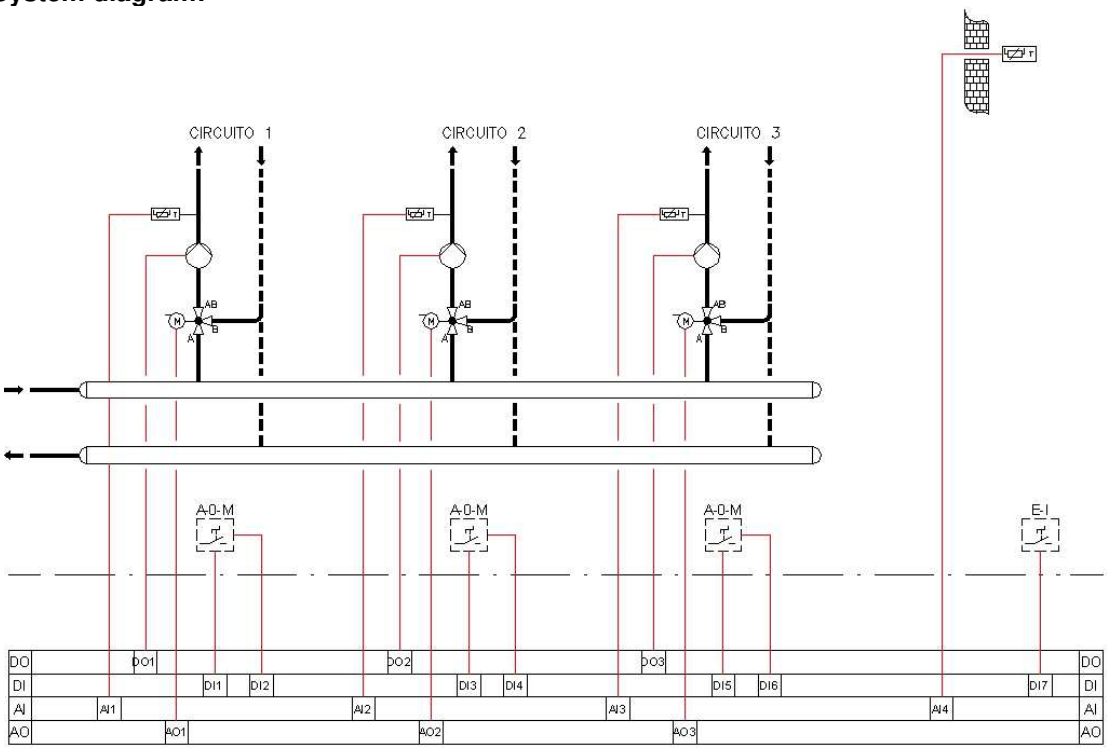
Climate regulation with seasonal changeover (from 1 to 3 zones)

System components:
- **Up to three climate circuits**

Control functions:
- **Up to three compensated regulations**

PLC functions:
- **1-3 Zones**
- **Seasonal changeover**
- **A time channel per zone**

System diagram:



1.2 Application 902

1.2.1 Operation description

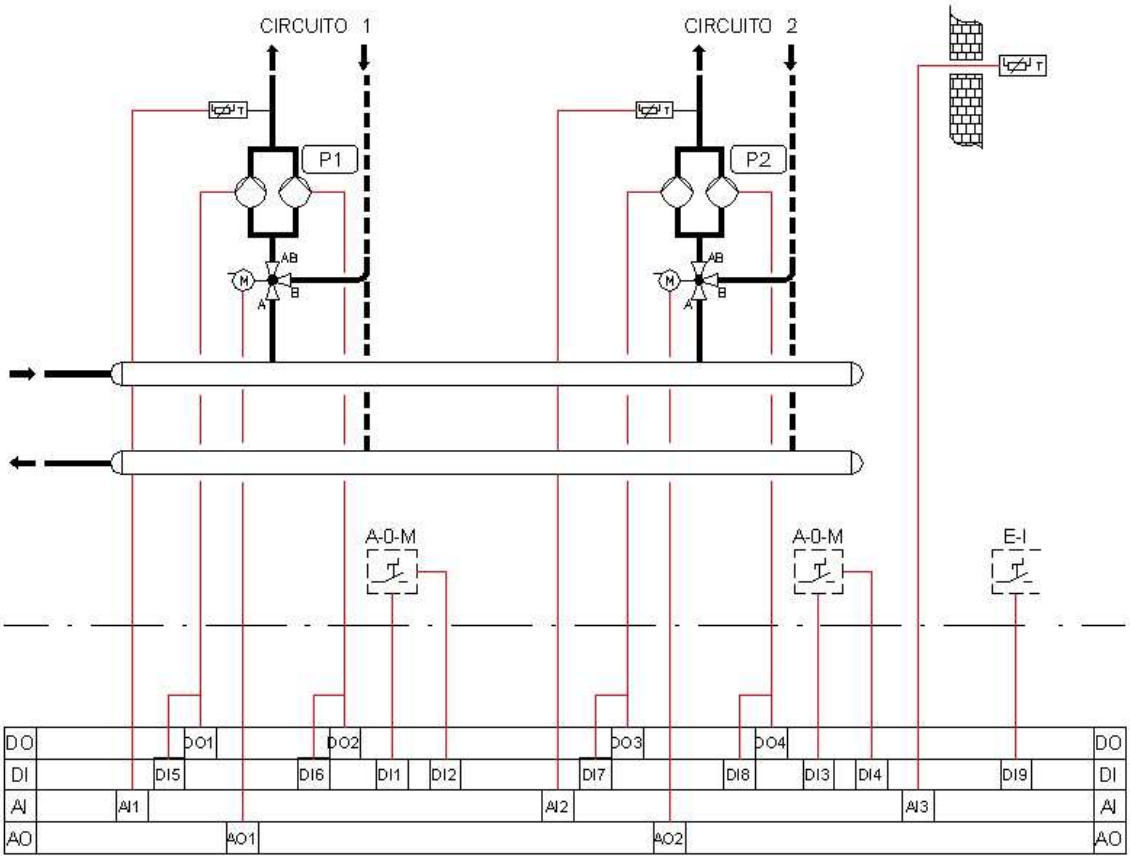
Climate regulation with seasonal changeover and twin-pump management (1 to 2 zones)

System components:
- **Up to two climate circuits**

Control functions:
- **Up to two compensated regulations**

PLC functions:
- **1-2 Zones**
- **Seasonal changeover**
- **A time channel per zone**
- **Pump changeover based on operation hours**
- **Pump changeover due to anomaly**

System diagram:



1.3 Application 903

1.3.1 Operation description

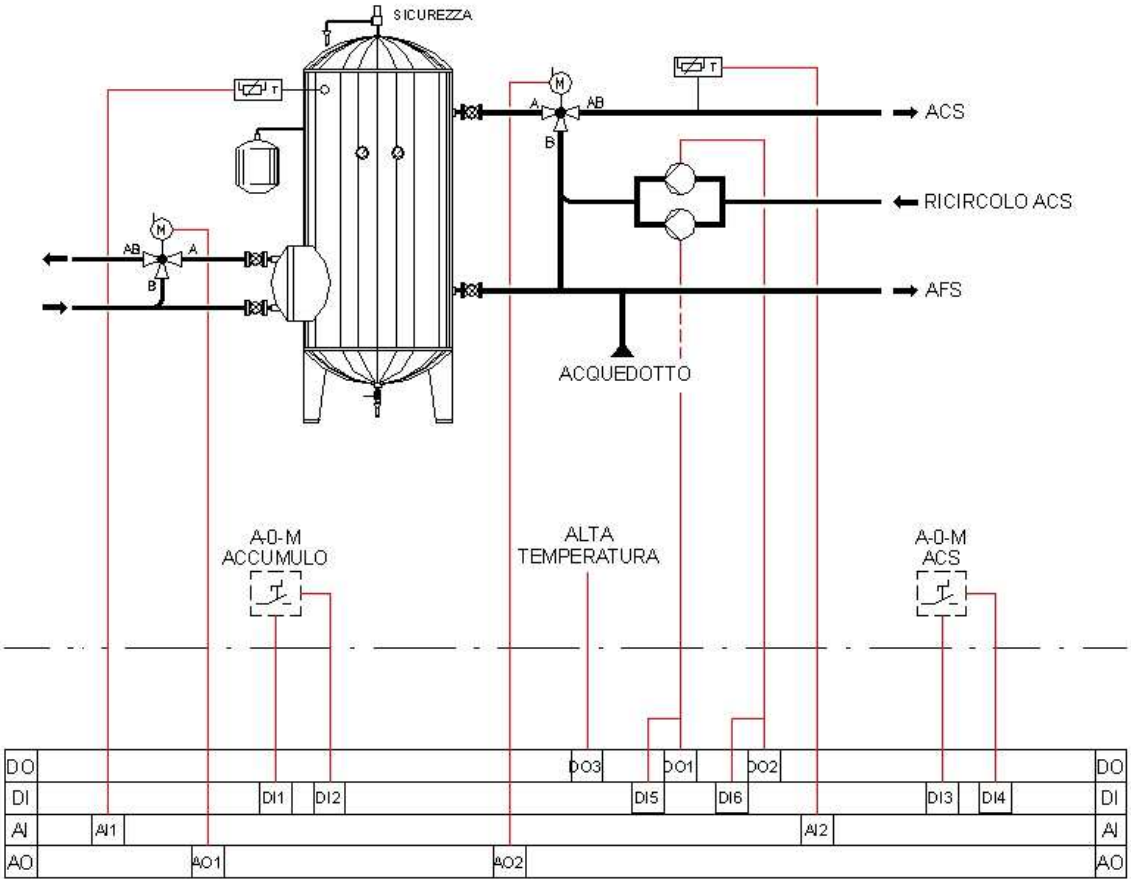
Production of domestic hot water with anti-legionella cycle – Boiler I

System components:
- **Boiler**
- **Domestic hot water**

Control functions:
- **Two heating circuits**
- **Overtemperature cycle**

PLC functions:
- **Time channel for operation**
- **Time channel for anti-Legionella cycle**
- **Pump changeover based on operation hours**
- **Pump changeover due to anomaly**

System diagram:



1.4 Application 904

1.4.1 Operation description

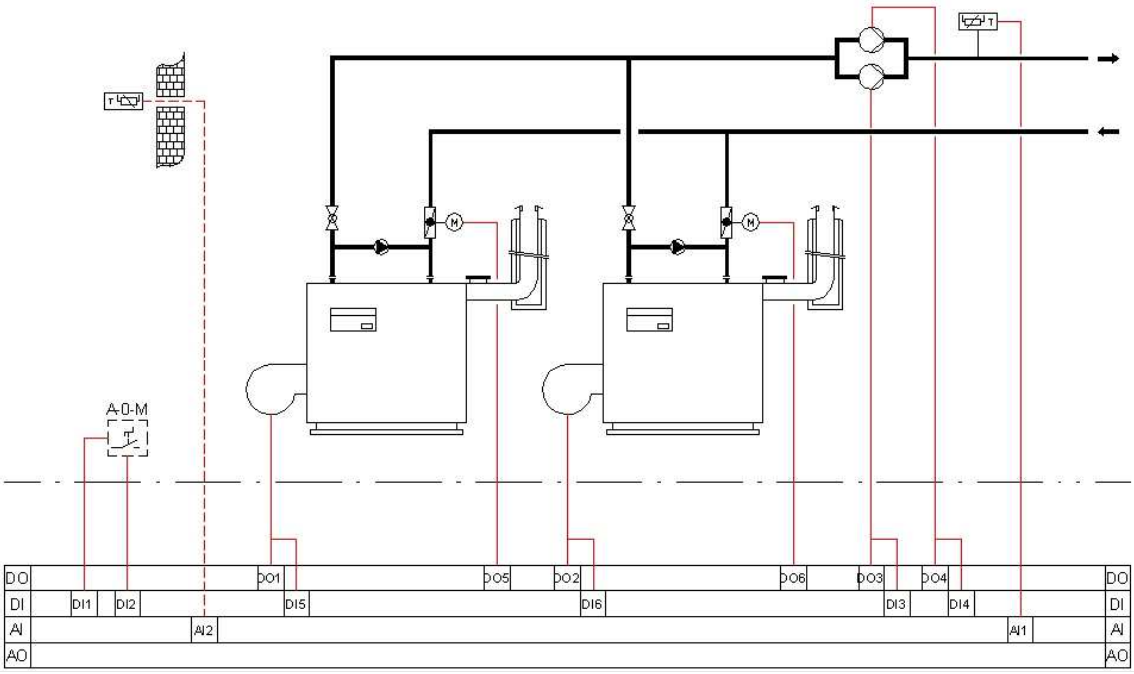
Cascade of two-boilers

System components:
- **Cascade of two boilers**

Control functions:
- **Supply temperature control with compensation (optional)**

PLC functions:
- **Time channel for operation**
- **Boiler changeover due to operation hours and anomaly**
- **Pump changeover due to operation hours and anomaly**
- **Second boiler deactivation due to outside temperature**

System diagram:



1.5 Application 911

1.5.1 Operation description

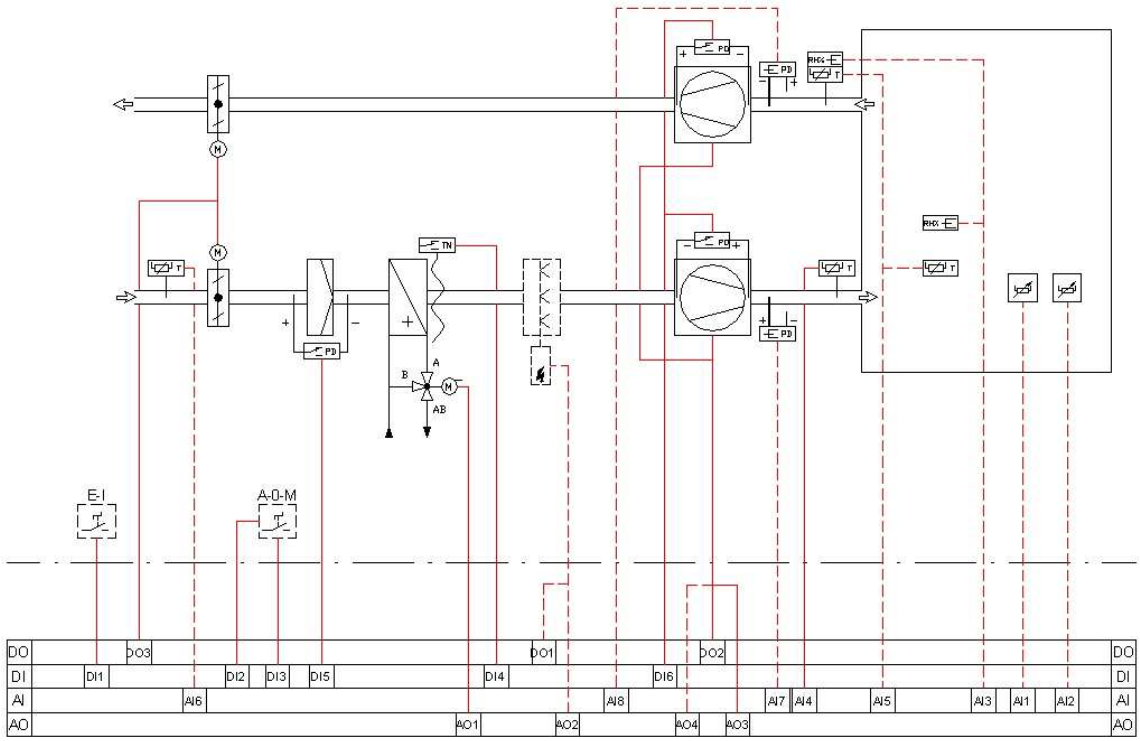
Fixed-value control of supply air temperature, with or without humidification

System components:
- **Outside air and exhaust air dampers**
- **Supply air and return air fans**
- **Heating coil with control valve**
- **Supply air or room temperature sensor**
- **Outside air temperature sensor (optional)**

Control functions:
- **Supply or room temperature control, with compensation (optional)**
- **Return or room humidity control (optional)**
- **Pressure control in air ducts**

PLC functions:
- **Time channel for operation**
- **Fan start delay**
- **Frost-protection**
- **Seasonal changeover**
- **DP alarm for filter/s**
- **Fan/s anomaly**

System diagram:



1.6 Application 911R

1.6.1 Operation description

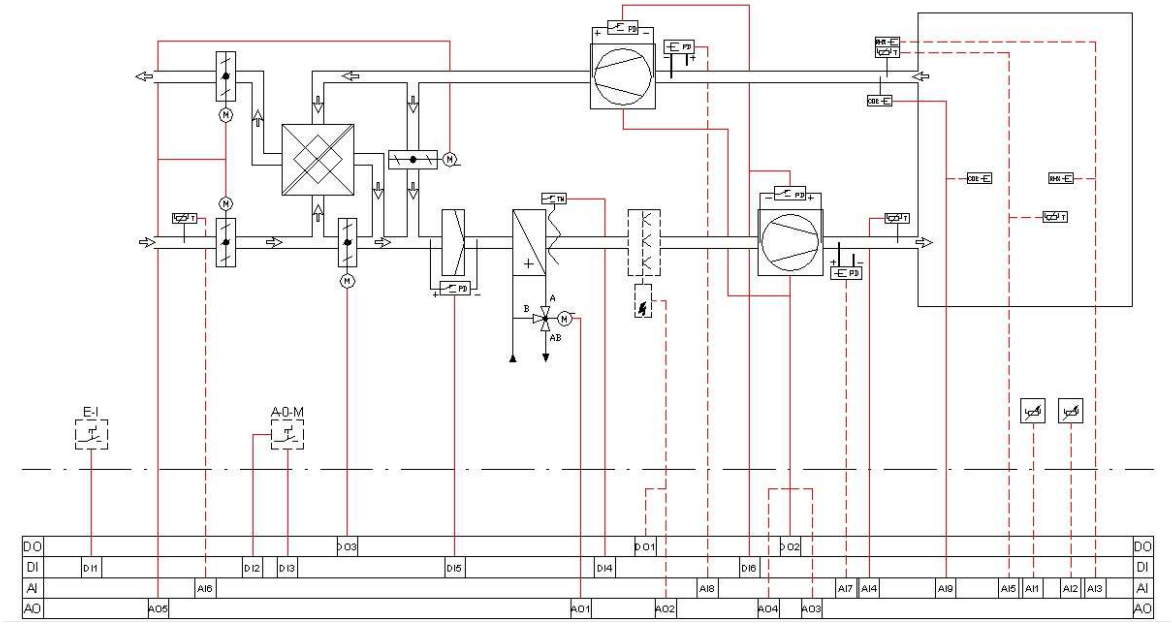
Fixed-value control of supply air with recuperator, with or without humidification, with or without CO^2

System components:
- **Outdoor air and exhaust air dampers**
- **Supply air and return air fans**
- **Heating coil with control valve**
- **Supply air or room temperature sensor**
- **Outdoor temperature sensor (optional)**

Control functions:
- **Control of supply or room temperature, with compensation (optional)**
- **Control of return air or room humidity (optional)**
- **Pressure control in air ducts**
- **CO^2 control**

PLC functions:
- **Time channel for operation**
- **Fan start delay**
- **Frost-protection**
- **By-pass damper for recuperator**
- **Seasonal changeover**
- **DP alarm for filter/s**
- **Fan/s anomaly**

System diagram:



1.7 Application 912

1.7.1 Operation description

Cascade control of room / supply air temperature, with or without humidification

System components:

- **Outdoor and exhaust air dampers**
- **Supply and return air fans**
- **Heating and cooling coils with control valve**
- **Supply temperature sensor and room or return temparature sensor**
- **Outdoor temperature sensor (optional)**

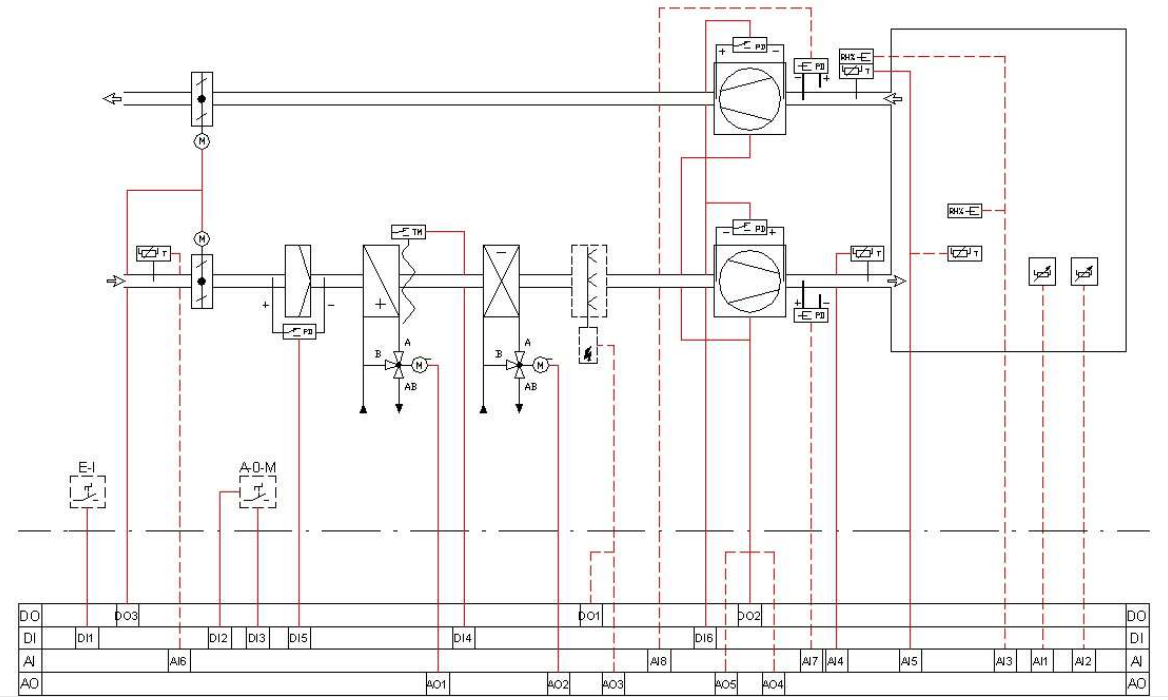
Control functions:

- **Cascade control of room / supply temperature with compensation (optional), or fixed-value control of supply temperature with compensation (optional)**
- **Control of return or room humidity (optional)**
- **Pressure control in air ducts**

PLC functions:

- **Time channel for operation**
- **Fan start delay**
- **Frost-protection**
- **Seasonal changeover**
- **DP alarm for filter/s**
- **Fan/s anomaly**

System diagram:



1.8 Application 912R

1.8.1 Operation description

Cascade control of room / supply air temperature, with recuperator, with or without humidification, with or without CO^2 control

System components:

- **Outdoor and exhaust air dampers**
- **Supply and return air fans**
- **Heating and cooling coils with control valve**
- **Supply temperature sensor and room or return temperature sensor**
- **Outdoor temperature sensor (optional)**

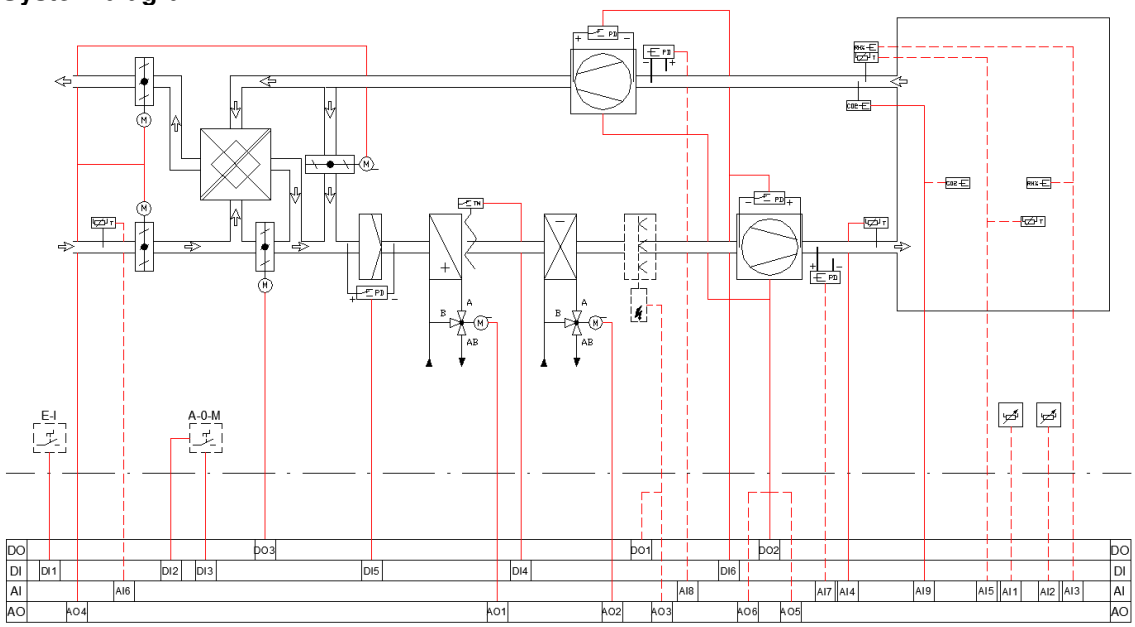
Control functions:

- **Cascade control of room / supply temperature with compensation (optional), or fixed-value control of supply temperature with compensation (optional)**
- **Return or room humidity control (optional)**
- **Pressure control in air ducts**
- **CO^2 control**

PLC functions:

- **Time channel for operation**
- **Fan start delay**
- **Frost-protection**
- **By-pass damper for recuperator**
- **Seasonal changeover**
- **DP alarm for filter/s**
- **Fan/s anomaly**

System diagram:



1.9 Application 913

1.9.1 Operation description

Cascade control of room / supply air temperature, with or without humidification and with a set of three dampers

System components:

- **Set of three dampers with outside air minimum**
- **Supply and return air fans**
- **Heating and cooling coils with control valve**
- **Supply temperature sensor and room or return temperature sensor**
- **Outdoor temperature sensor (optional)**

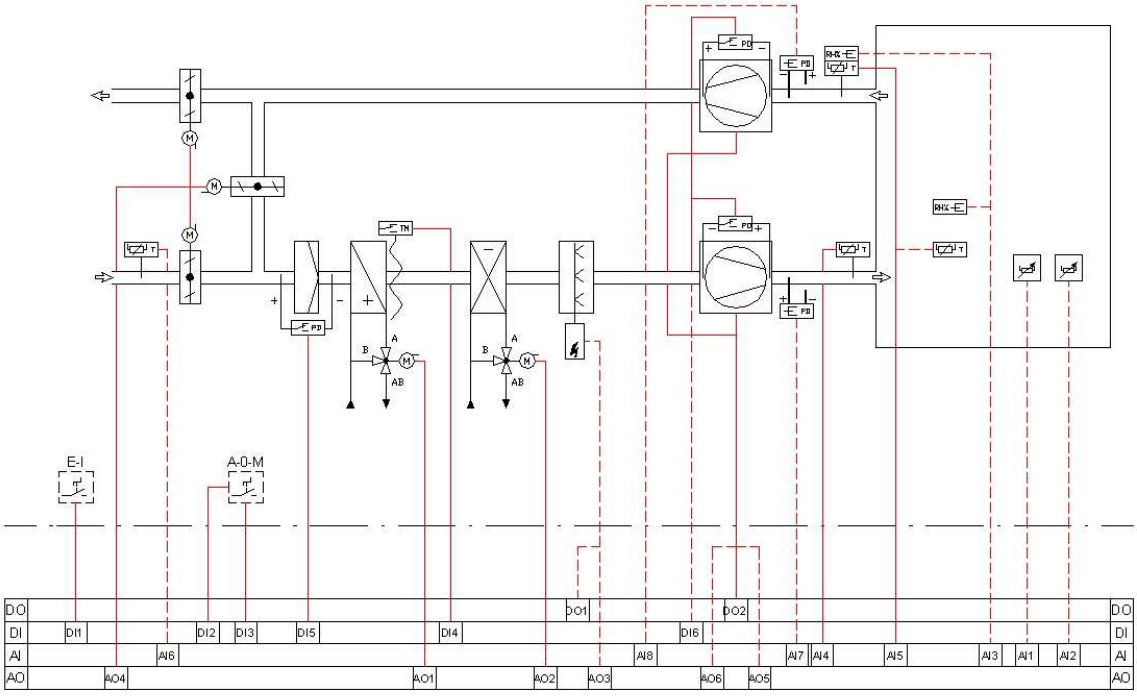
Control functions:

- **Cascade control of room / supply air temperature with compensation (optional), or fixed-value control of supply temperature with compensation (optional)**
- **Return or room humidity control (optional)**
- **Pressure control in air ducts**

PLC functions:

- **Time channel for operation**
- **Frost-protection**
- **Seasonal changeover**
- **Reversion of the three-damper set working direction**
- **DP alarm for filter/s**
- **Fan/s anomaly**

System diagram:



1.10 Application 913R

1.10.1 Operation description

Cascade control of room / supply air temperature, with or without humidification and with a set of three dampers

System components:

- **Set of three dampers with outside air minimum**
- **Supply and return fans**
- **Heating and cooling coils with control valve**
- **Supply temperature sensor and room or return temperature sensor**
- **Outdoor temperature sensor (optional)**

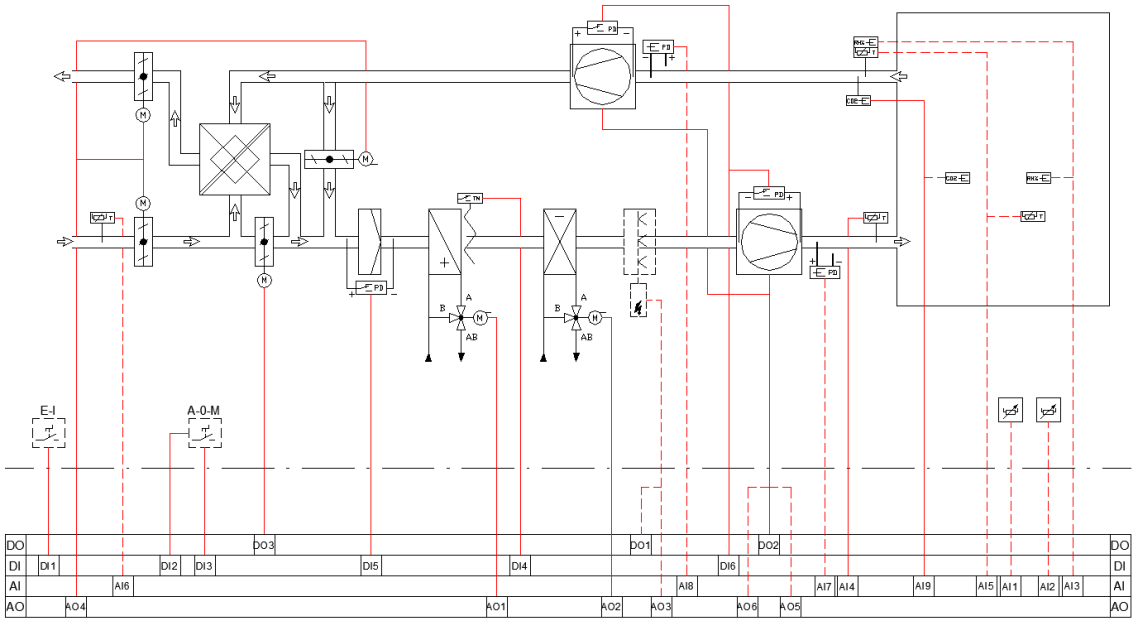
Control functions:

- **Cascade control of room / supply temperature with compensation (optional), or fixed-value control of supply temperature with compensation (optional)**
- **Return and room humidity control (optional)**
- **Pressure control in air ducts**
- **CO^2 control**

PLC functions:

- **Time channel for operation**
- **Frost-protection**
- **Seasonal changeover**
- **Reversion of the three-damper set working direction**
- **By-pass damper for recuperator**
- **DP alarm for filter/s**
- **Fan/s anomaly**

System diagram:



1.11 Application 915

1.11.1 Operation description

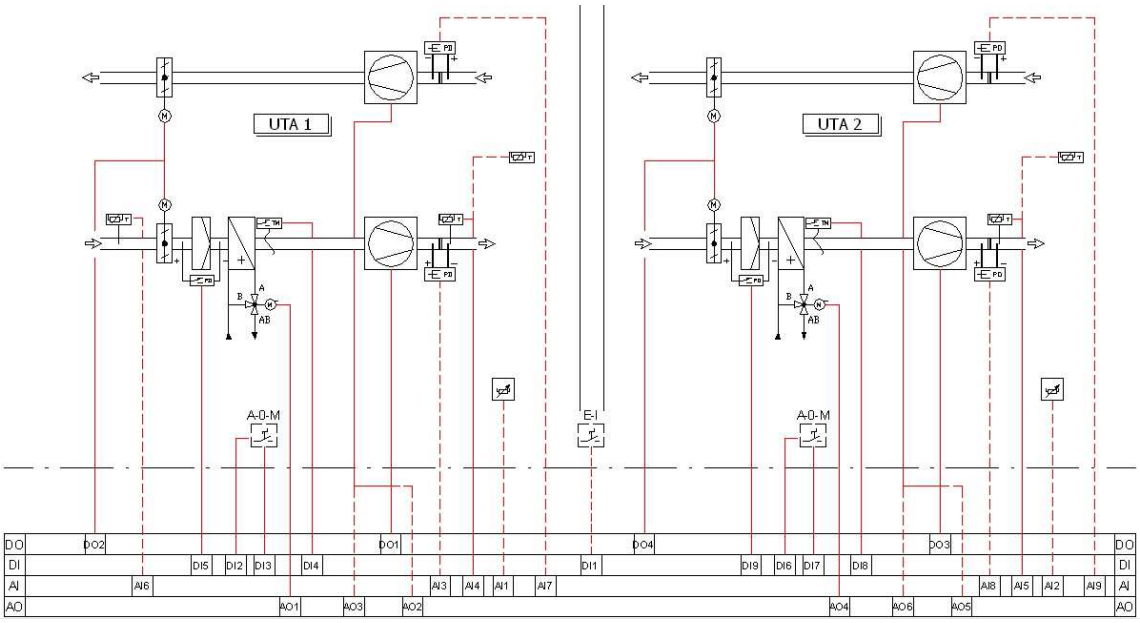
Fxed-value control of supply air temperature (2 Zones)

System components per zone:
- **Outdoor air and exhaust air dampers**
- **Supply and return fans**
- **Heating coil with control valve**
- **Supply or room temperature sensor**
- **Outdoor temperature sensor (optional)**

Control functions per zone:
- **Control of supply or room temperature with compensation (optional)**
- **Pressure control in air ducts**

PLC functions per zone:
- **Time channel for operation**
- **Fan start delay**
- **Frost-protection**
- **Reduced operation**
- **Seasonal changeover**

System diagram



1.12 Application 915R

1.12.1 Operation description

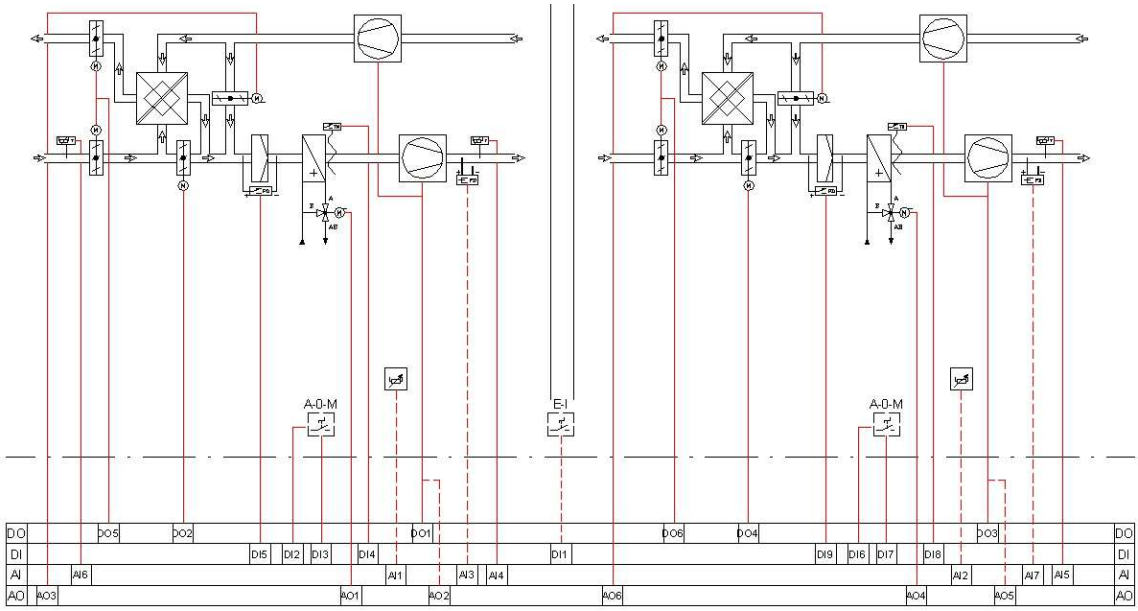
Cascade control of room / supply air temperature (2 Zones) with recuperator, with and without pressure control

System components per zone:
- **Outdoor air and exhaust air damper**
- **By-pass damper for recuperator**
- **Supply air and return air fans**
- **Heating coil with control valve**
- **Supply or room temperature sensor**
- **Outdoor temperature sensor**
- **Air pressure sensor (optional)**

Control functions per zone:
- **Supply or room temperature control, with compensation (optional)**
- **Pressure control in air duct**

PLC functions per zone:
- **Time channel for operation**
- **Fan start delay**
- **Frost-protection**
- **Reduced operation**
- **Seasonal changeover**

System diagram



1.13 Application 916

1.13.1 Operation description

Cascade control of room / supply air temperature (2 Zones)

System components per zone:

- **Outdoor air and exhaust air damper**
- **Supply air and air return fans**
- **Heating and cooling coils with control valve**
- **Supply temperature sensor and room or return temperature sensor**
- **Outdoor temperature sensor (optional)**

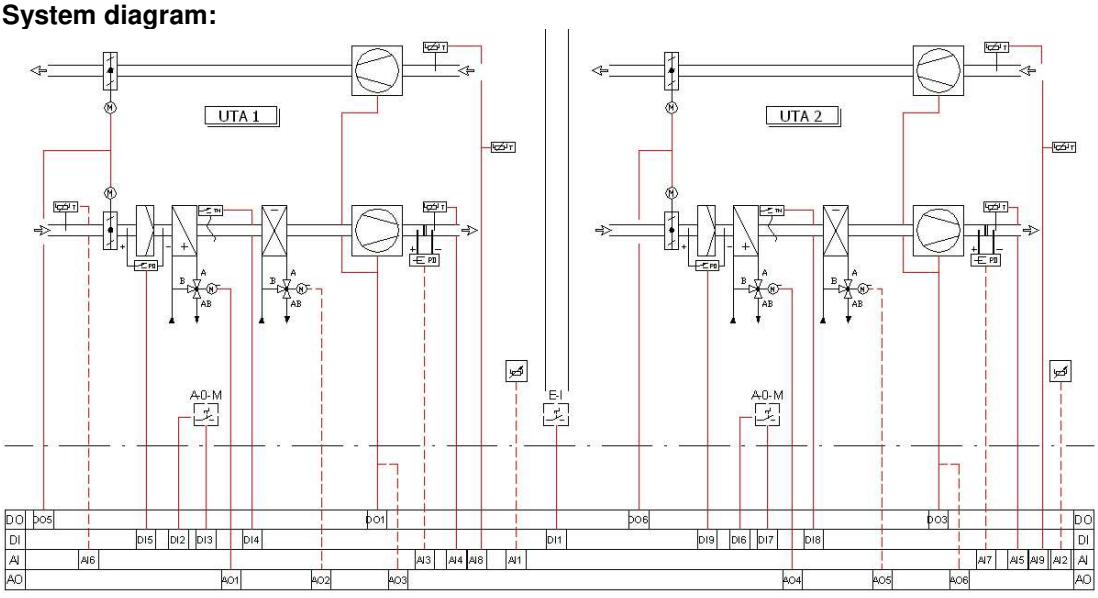
Control functions per zona:

- **Cascade control of room / supply temperature with compensation (optional), or fixed-value control of supply temperature with compensation (optional)**
- **Pressure control in air ducts**

PLC functions per zone:

- **Time channel for operation**
- **Fan start delay**
- **Frost-protection**
- **Reduced operation**
- **Seasonal changeover**

System diagram:



1.14 Application 916R

1.14.1 Operation description

Fixed-value control of supply air temperature (2 Zones) with recuperator, with and without pressure control

System components per zone:

- **Outdoor air and exhaust air damper**
- **By-pass damper for recuperator**
- **Supply air and return air fans**
- **Heating and cooling coils with control valve**
- **Supply temperature sensor and room or return temperature sensor.**
- **Outdoor temperature sensor**
- **Pressure sensor for air duct**

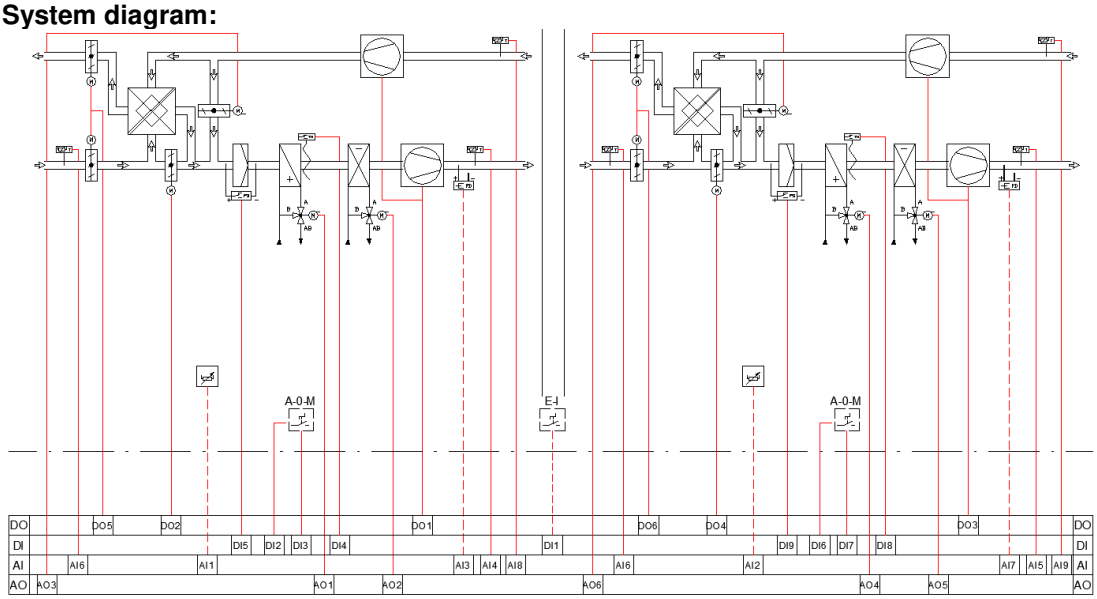
Control functions per zone:

- **Cascade control of room / supply temperature with compensation (optional), or fixed-value control of supply temperature with compensation (optional)**
- **Pressure control in air ducts**

PLC functions per zone:

- **Time channel for operation**
- **Fan start delay**
- **Frost-protection**
- **By-pass damper for recuperator**
- **Reduced operation**
- **Seasonal changeover**

System diagram:



1.15 Application 921

1.15.1 Operation description

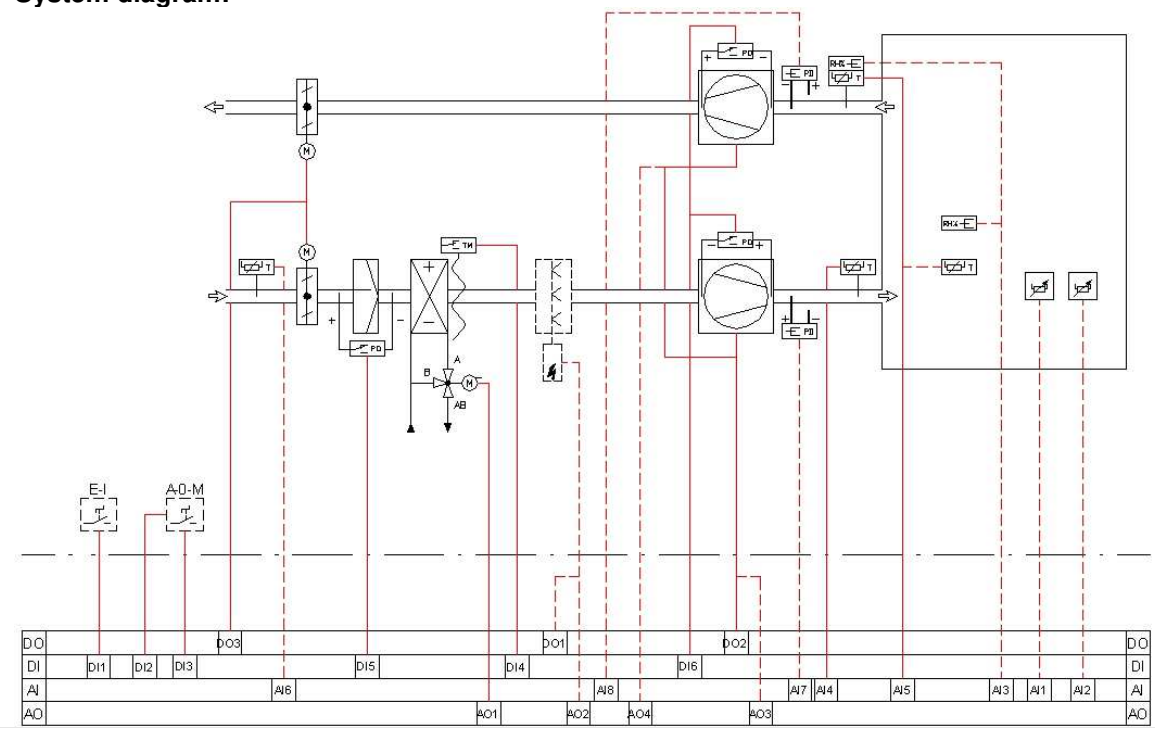
Cascade control of room / supply air temperature, with or without humidification and seasonal changeover

System components:
- **Outdoor air and exhaust air damper**
- **Supply air and return air fans**
- **Heating or cooling coil with control valve**
- **Supply temperature sensor and room or return temperature sensor**
- **Outdoor temperature sensor (optional)**

Control functions:
- **Cascade control of room / supply temperature with compensation (optional), or fixed-value control of supply temperature with compensation (optional)**
- **Control of return or room humidity (optional)**
- **Pressure control in air ducts**

PLC functions:
- **Time channel for operation**
- **Fan start delay**
- **Seasonal changeover**
- **Frost-protection**
- **Reduced operation**
- **DP alarm for filter/s**
- **Fan/s anomaly**

System diagram:



1.16 Application 921R

1.16.1 Operation description

Cascade control of room / supply temperature with recuperator, with or without humidification and seasonal changeover, with and without CO^2 control

System components:

- **Outdooor air and exhaust air damper**
- **Supply air and return air fans**
- **Heating or cooling coil with control valve**
- **Supply temperature sensor and room or return temperature sensor**
- **Outdoor temperature sensor (optional)**

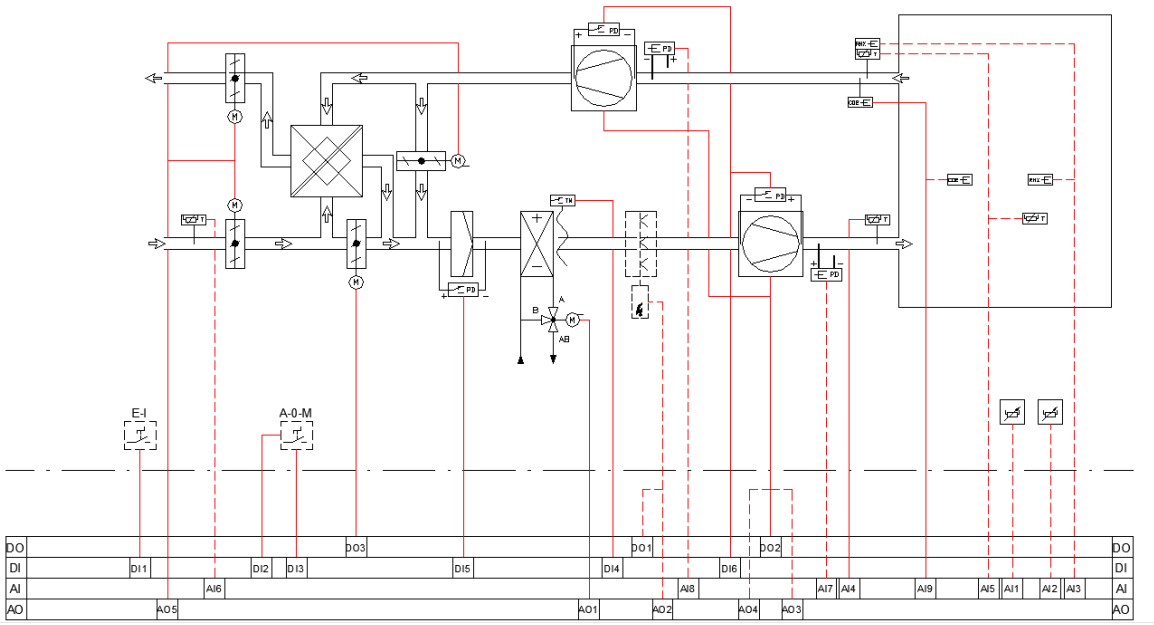
Control functions:

- **Cascade control of room / supply temperature with compensation (optional), or fixed-value control of supply temperature with compensation (optional)**
- **Control of return or room humidity (optional)**
- **Pressure control in air ducts**
- **CO^2control**

PLC functions:

- **Time channel for operation**
- **Fan start delay**
- **Seasonal changeover**
- **Frost-protection**
- **By-pass damper for recuperator**
- **DP alarm for filter/s**
- **Fan/s anomaly**

System diagram:



1.17 Application 924

1.17.1 Operation description

Cascade control of room / supply air temperature, with fixed-value pre-heating, set of three dampers and with or without humidification and dehumidification

System components:

- **Set of three dampers with outside air minimum**
- **Supply air and return air fans**
- **Pre-heating, cooling and post-heating coils with control valve**
- **Pre-heating temperature sensor**
- **Supply temperature sensor and room or return temperature sensor**
- **Outdoor temperature sensor (optional)**

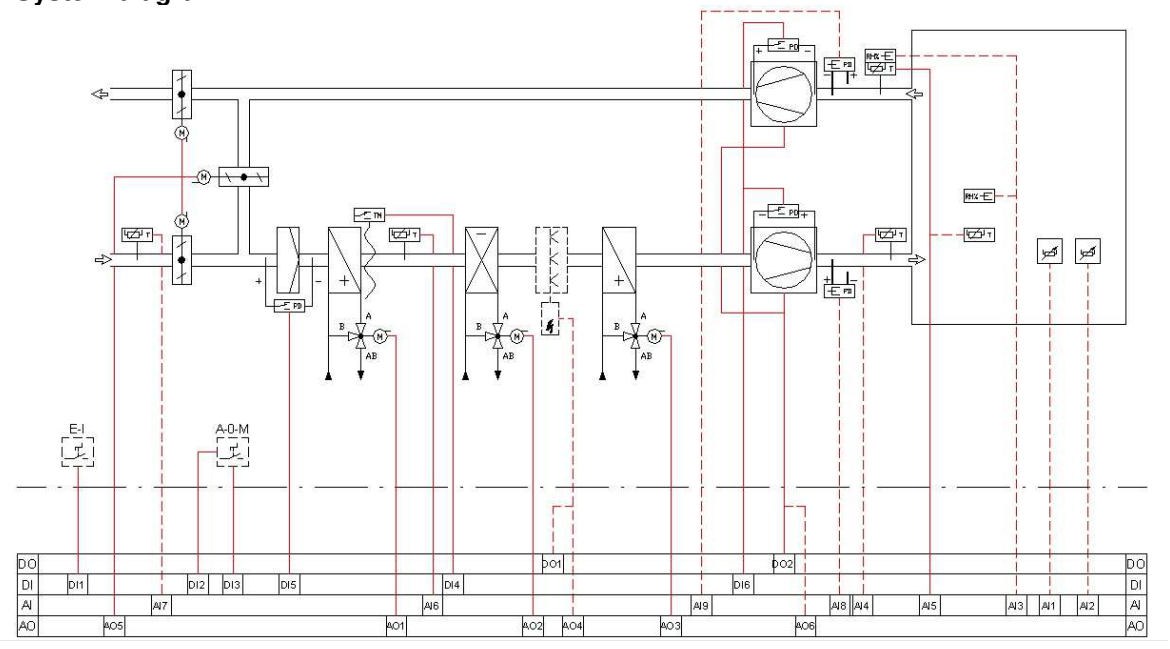
Control functions:

- **Fixed-value control of pre-heating temperature**
- **Cascade control of room / supply temperature with compensation (optional), or fixed-value control of supply temperature with compensation (optional)**
- **Return or room humidity control (optional)**
- **Pressure control in air ducts**

PLC functions:

- **Time channel for operation**
- **Frost-protection**
- **Seasonal changeover**
- **Reversion of the three-damper set working direction**
- **DP alarm for filter/s**
- **Fan/s anomaly**

System diagram:



1.18 Application 924R

1.18.1 Operation description

Cascade control of room / supply air temperature, with fixed-value pre-heating, set of three dampers and recuperator, with or without humidification and dehumidification, with or without CO^2

System components:

- **Set of three dampers with outdoor air minimum**
- **Supply and return fans**
- **Pre-heating, cooling and post-heating coils with control vallve**
- **Pre-heating temperature sensor**
- **Supply temperature sensor and room or return air temperature sensor**
- **Outdoor temperature sensor (optional)**

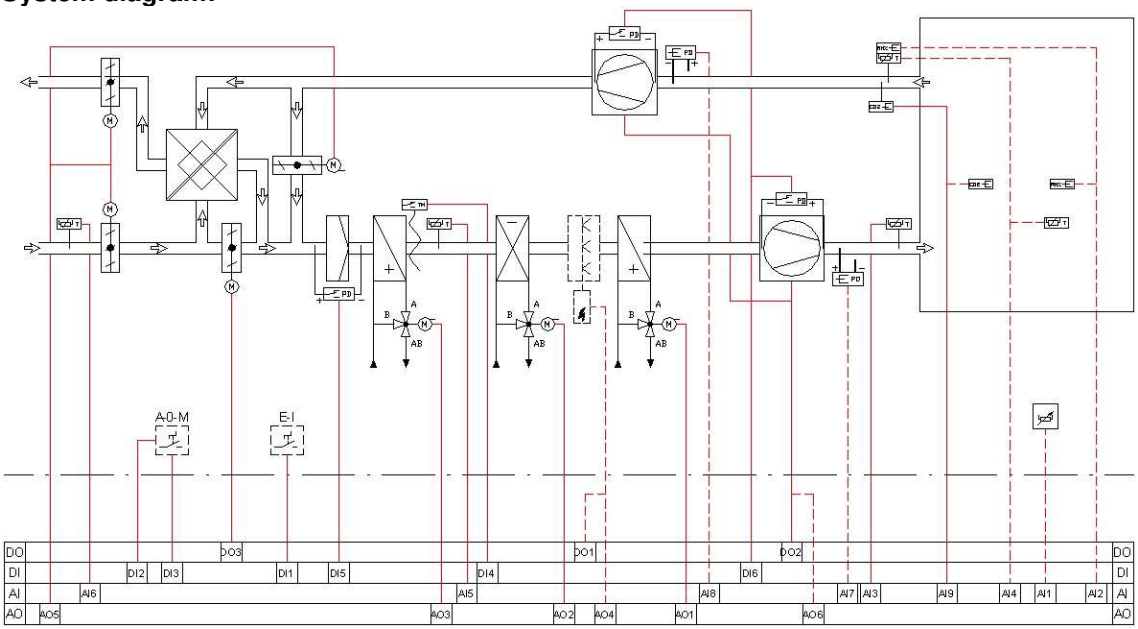
Control functions:

- **Fixed-value control of pre-heating temperature**
- **Cascade control of room / supply temperature with compensation (optional), or fixed-value control of supply temperature with compensation (optional)**
- **Return or room humidity control (optional)**
- **Pressure control in air ducts**
- **CO^2control**

PLC functions:

- **Time channel for operation**
- **Frost-protection**
- **Seasonal changeover**
- **Reversion of the three-damper set working direction**
- **DP alarm for filter/s**
- **Fan/s anomaly**

System diagram:



Application 935

1.18.2 Operation description

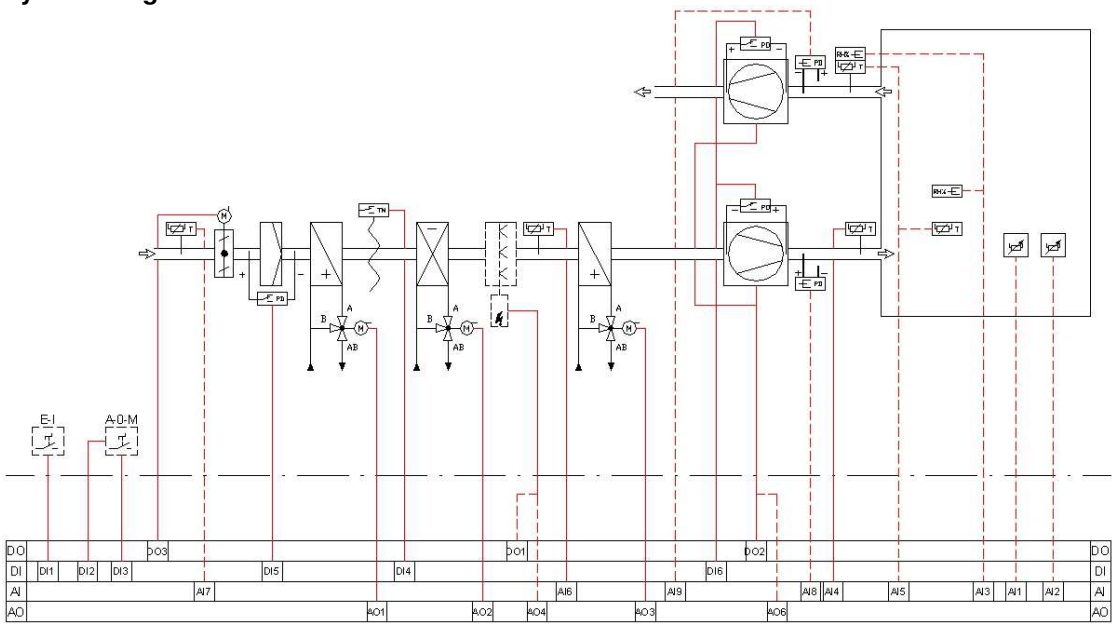
Primary air conditioning unit

System components:
- **Outdoor air damper**
- **Supply air and return air fans**
- **Pre-heating, cooling and post-heating coils with control valve**
- **Saturation temperature sensor**
- **Supply air temperature sensor**
- **Outdoor temperature sensor (optional)**

Control functions:
- **Fixed-value control of pre-heating temperature**
- **Fixed-value control of supply temperature with compensation (optional)**
- **Return or room humidity control**
- **Pressure control in air ducts**

PLC functions:
- **Time channel for operation**
- **Fan start delay**
- **Frost-protection**
- **Seasonal changeover**
- **DP alarm for filter/s**
- **Fan/s anomaly**

System diagram:



1.19 Application 935R

1.19.1 Operation description

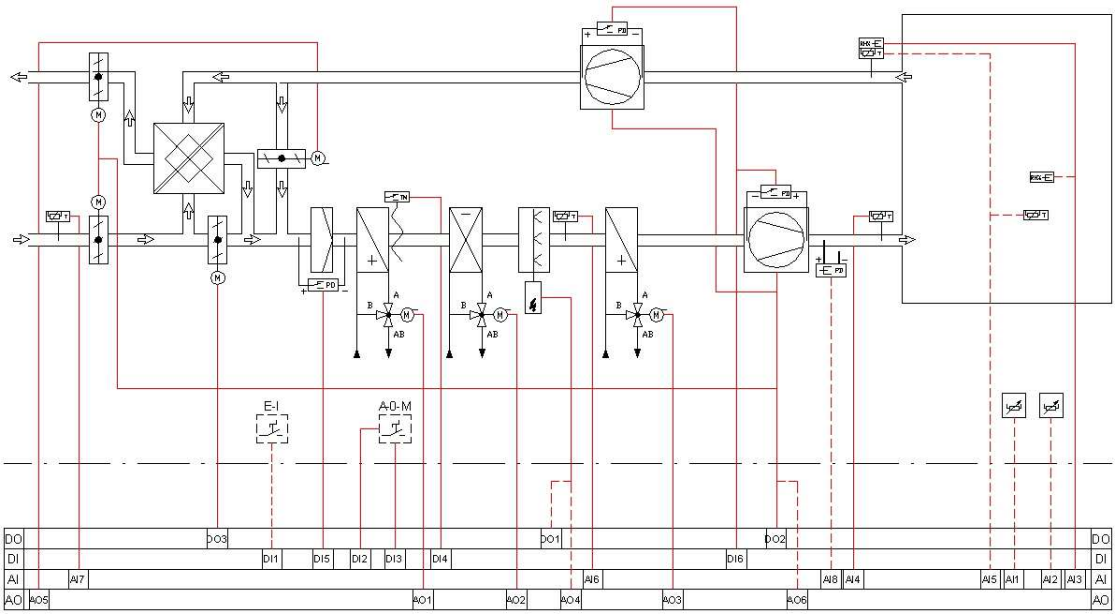
Primary air conditioning unit with recuperator with or without CO^2

System components:
- **Outdoor air damper**
- **Supply air and return air fans**
- **Pre-heating, cooling and post-heating coils with control valve**
- **Saturation temperature sensor**
- **Supply temperature sensor**
- **Outdoor temperature sensor (optional)**

Control functions:
- **Fixed-value control of pre-heating temperature**
- **Fixed-value control of supply temperature with compensation (optional)**
- **Return or room humidity control**
- **Pressure control in air ducts**

PLC functions:
- **Time channel for operation**
- **Fan start delay**
- **Frost-protection**
- **By-pass damper for recuperator**
- **Seasonal changeover**
- **DP alarm for filter/s**
- **Fan/s anomaly**

System diagram:



1.20 Application 936

1.20.1 Operation description

All-air conditioning unit

System components:

- Set of three dampers with outdoor air minimum
- Supply air and return air fans
- Pre-heating, cooling and post-heating coils with control valve
- Saturation temperature sensor
- Supply temperature sensor and room or return temperature sensor
- Outdoor temperature sensor (optional)

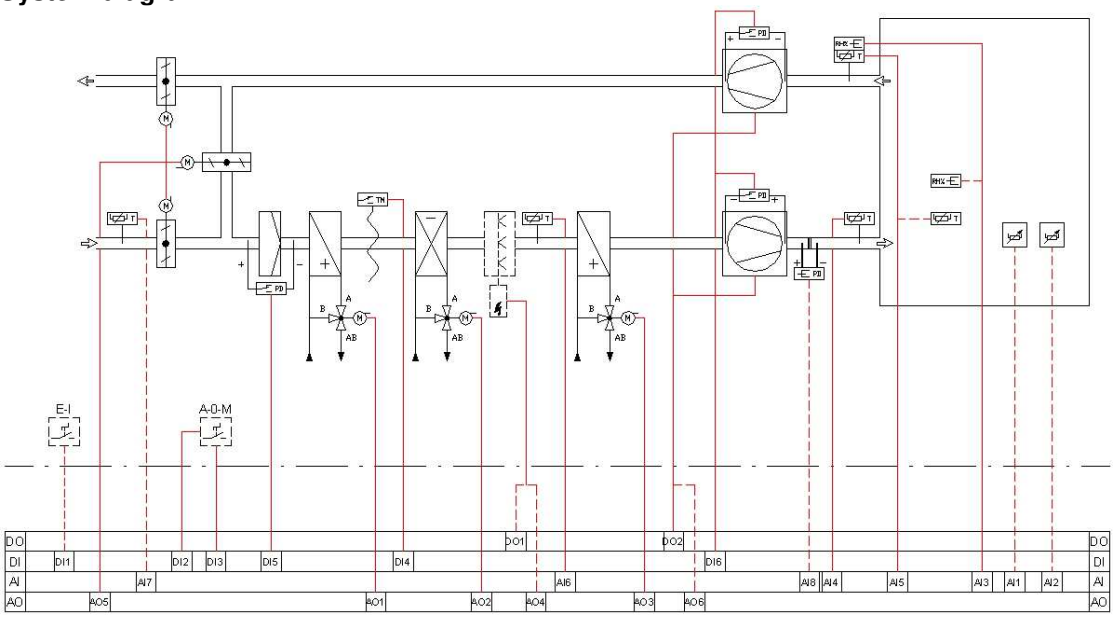
Control functions:

- Fixed-value control of saturation temperature
- Cascade control of room / supply temperature with compensation (optional), or fixed-value control of supply temperature with compensation (optional)
- Return or room humidity control (optional)
- Pressure control in air ducts

PLC functions:

- Time channel for operation
- Frost-protection
- Seasonal changeover
- Reversion of the three-damper set working direction
- DP alarm for filter/s
- Fan/s anomaly

System diagram:



1.21 Application 936R

1.21.1 Operation description

All-air conditioning unit with recuperator, with or without CO^2 control

System components:

- **Set of three dampers with outdoor air minimum**
- **By-pass damper for recuperator**
- **Supply air and return air fans**
- **Pre-heating, cooling and post-heating coils with control valve**
- **Saturation temperature sensor**
- **Supply temperature sensor and room or return temperature sensor**
- **Outdoor temperature sensor**
- **Relative humidity sensor for return or room air**
- **CO^2 sensor (optional)**

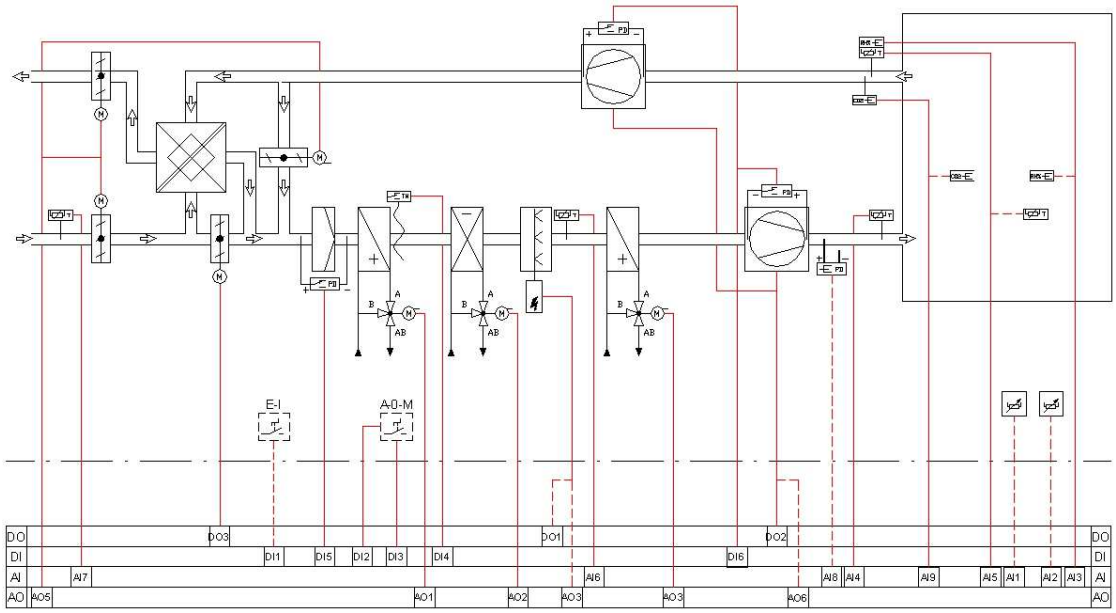
Control functions:

- **Fixed-value control of saturation temperature**
- **Cascade control of room / supply temperature with compensation (optional), or fixed-value control of supply temperature with compensation (optional)**

PLC functions:

- **Time channel for operation**
- **Frost-protection**
- **By-pass damper for recuperator**
- **Seasonal changeover**
- **Reversion of the three-damper set working direction**
- **DP alarm for filter/s**
- **Fan/s anomaly**

System diagram:



1.22 Application 937

1.22.1 Operation description

Cascade control of room / supply air temperature with humidification for indoor swimming pools – CTUAF RO I

System components:

- **Set of three dampers with outdoor air minimum**
- **Supply air and return air fans**
- **Heating coil with control valve**
- **Window temperature sensor**
- **Supply temperature sensor and return temperature sensor**
- **Sensor for return air relative humidity**

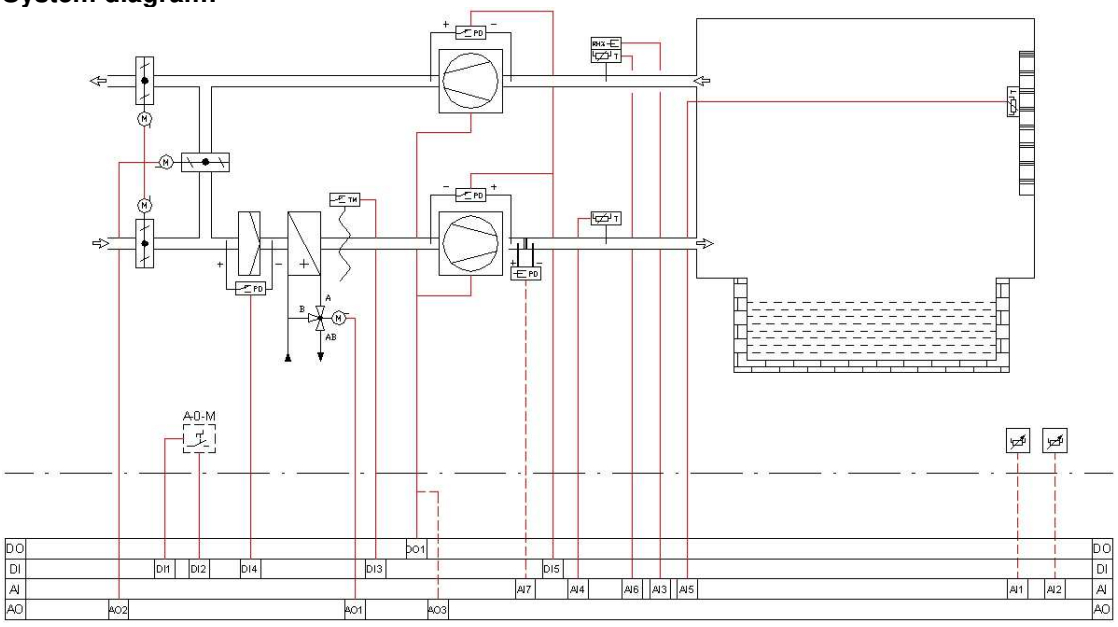
Control functions:

- **Fixed-value control of room temperature or with minumum and maximum limitations of supply temperature**
- **Control of return air humidity with window temperature compensation**

PLC functions:

- **Time channel for operation**
- **Frost-protection**
- **Damper activation for cooling**
- **DP alarm for filter/s**
- **Fan/s anomaly**

System diagram:



1.23 Application 937R

1.23.1 Operation description

Cascade control of room / supply air temperature with humidification for indoor swimming pools and recuperator, with or without CO^2

System components:

- **Set of three dampers with outdoor air minimum**
- **Supply air and return air fans**
- **Heating coil with control valve**
- **Window temperature sensor**
- **Supply temperature sensor and return temperature sensor**
- **Sensor for return air relative humidity**
- **CO^2 sensor**

Control functions:

- **Fixed-value control of room temperature or with minumum and maximum limitations of supply temperature**
- **Control of return air humidity with window temperature compensation**
- **Pressure control of air ducts**
- **CO^2 control**

PLC functions:

- **Time channel for operation**
- **Frost-protection**
- **By-pass damper for recuperator**
- **Dampers activation for cooling**
- **DP alarm for filter/s**
- **Fan/s anomaly**

System diagram: