INTEGRATED CONTROL SYSTEM

MANDÍK CPV

EUROVENT CERTIFIED PERFORMANCE
AHU N° 17.04.018
Range AHU MANDÍK
www.eurovent-certification.com

TÜV SÜD

RLT
Raumlufttechnische Geräte
Herstellerverband e.V.

MANDÍK®

INTEGRATED CONTROL SYSTEM

As standard, the compact air-handling unit by Mandík is fitted with Plug&Play control system. It means the complete installation of all needed sensors and actuators, their interconnection with the controller, testing in the manufacturing plant and putting into the factory or customer-specified setting.

A freely programmable CLIMATIX PLC sourced from Siemens is used to control Mandík CPV air handlers; this controller meets the latest requirements arising from technical, technological, environmental and economic needs. This controller is one of the best rated controllers for ventilation units.

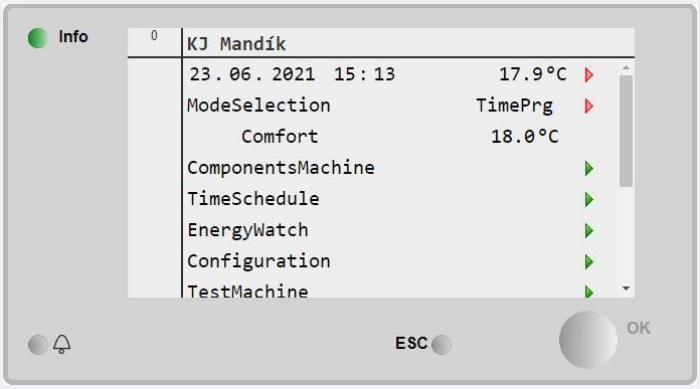
The control system allows for safe and economical operation of the unit with a focus on the maximum efficiency and therefore minimum operating costs and also with respect to the easiest possible intuitive control.

A considerable asset is the wide range of communication options enabling easy control and cooperation with most of the superior systems and integration into building technology systems.

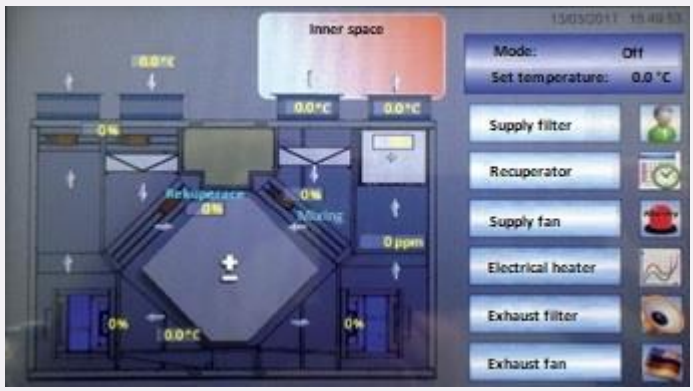
The integrated control unit with CLIMATIX controller offers:

- Everything is connected and pre-set from the factory (Plug&Play)
- The unit is terminated with only a cable gland or an electrical plug (1~230 V / 50 Hz or 3~400 V / 50 Hz, depending on the size of the unit)
- Easy control in several variants
- Local and remote control
- Weekly and annual schedule
- Display with clear representation of all data
- Possibility to parametrize the system
- Display in several language versions to choose from
- Possibility to select from multiple operating modes
- Inlet or room temperature control
- Automatic detection of the need of heating
- Comprehensive precise control of ventilation operation
- Accurate listing of alarms including history
- Changes to important parameters require a password (multiple levels)
- Control from the PC or Tablet through a web browser (HMI@Web)
- Possibility of visualization through the Touch Panel - setting of basic parameters (temperature, speed, operating mode)
- Possibility of cooperation with superior systems of the building (ModBus RS485, TCP/IP, LON, KNX, BAC net)

SCREEN APPEARANCE when controlled through HMI@Web:

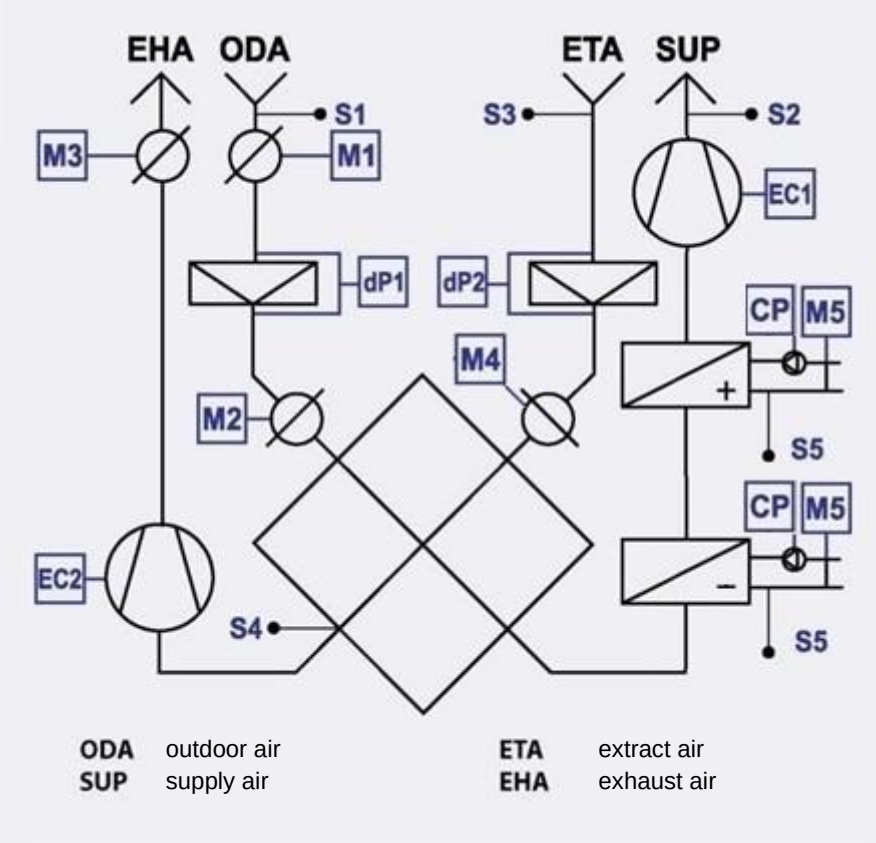


SCREEN APPEARANCE when controlled through the Touch Panel:



CONTROL DIAGRAM OF THE UNIT

VERSION WITH HOT WATER COIL:



EC1 - supply EC fan
EC2 - return EC fan

M1 - supply damper actuator
M2 - by-pass damper actuator
M3 - return damper actuator
M4 - mixing damper actuator
M5 - actuator of the 3-way mixing valve serving the hot/cold water coil

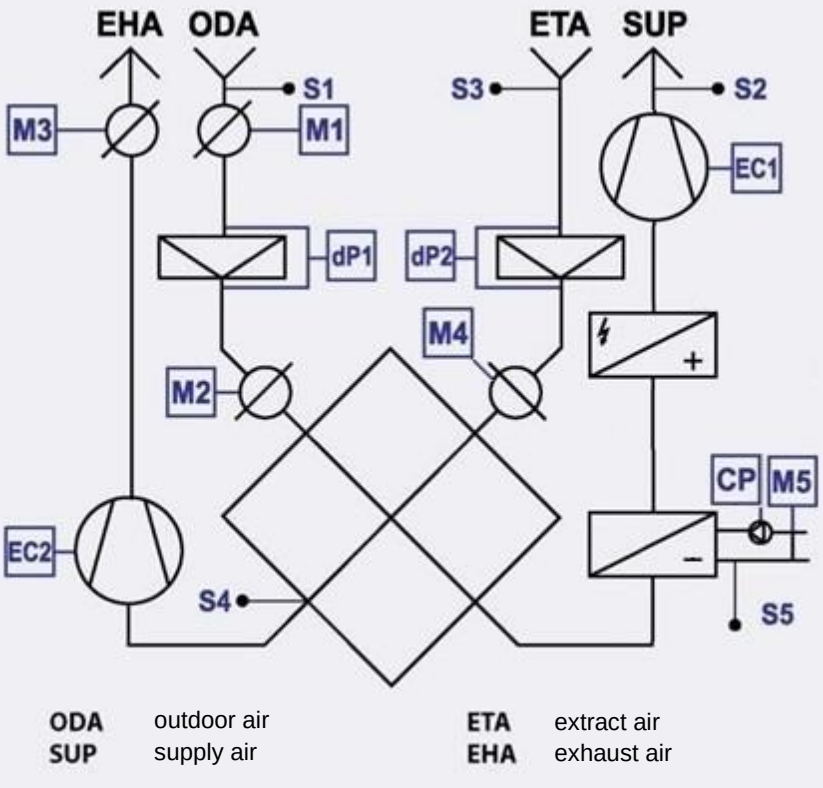
dP1 - differential pressure switch of the supply filter
dP2 - differential pressure switch of the return filter

S1 - outdoor air temperature sensor
S2 - supply air temperature sensor
S3 - return air temperature sensor
S4 - heat recovery freeze-protection temperature sensor
S5 – hot/cold water coil return water temperature sensor

CP - coil circulating pump

(right-hand version)

VERSION WITH ELECTRIC HEATING:



INTEGRATED CONTROL SYSTEM

STANDARD EQUIPMENT OF THE UNIT

INTEGRATED SWITCHBOARD
with controller
Siemens CLIMATIX

* electrical cabinet can be build-in or external

Functions	Local and remote control, annual and weekly schedule, various operating modes, flow, temperature and humidity control in supply or space, listing of alarms, connection of all HVAC components into one control system, control from the PC through a web browser, possibility of visualization and cooperation with BMS, various language versions
Operating voltage	1~230 V / 50 Hz or 3~400 V / Hz
Operating temperature	0 ... 40 °C
Protection per EN 60529	IP 50

DAMPER ACTUATORS
supply/return/by-pass/mixing

Operating voltage	AC/DC 24 V, 50/60 Hz
Torque	2 Nm – 4 Nm
Control	DC 2 .... 10 V
Operating temperature	0 .... 50 °C
Protection per EN 60529	IP 54

PRESSURE DIFFERENTIAL SWITCHES OF FILTERS/FANS
DBL-205A

Operating voltage	AC max. 250 V
Output signal	SPDT micro-switch
Measuring range	30 ... 400 Pa
Operating temperature	-20 ... 85 °C
Protection per EN 60529	IP 54

TEMPERATURE SENSOR: SUPPLY / EXTRACT / EXHAUST
NT0420-NTC10K-01

Measured quantity	Resistance
Measuring range	-30 ... 150 °C
Protection per EN 60529	IP 67

TEMPERATURE SENSOR: HEAT RECOVERY FROST
NT0420-NI1000-01

Measured quantity	Resistance
Measuring range	-50 ... 110 °C
Protection per EN 60529	IP 67

SURFACE TEMPERATURE SENSOR
SC-NTC10-01

Measured quantity	Resistance
Measuring range	-20 ... 120 °C
Protection per EN 60529	IP 42

CAPILLARY FREEZE-PROTECTION THERMOSTAT OF THE WATER COIL
TF 18

Operating voltage	AC 24 ... 250 V
Output signal	SPDT micro-switch
Measuring range	DC 0 ... 10 V
Operating temperature	-10 ... 10 °C
Protection per EN 60529	IP 65
Length	1.8 m

ELECTRIC HEATING PERFORMANCE CONTROL (PWM, SSR)

SERVICE SWITCH

Functions	Switching off the entire HVAC unit incl. the control system
Current	max. 2 A

OPTIONAL ACCESSORIES

BUILT-IN CONTROLLER IN THE FRONT PANEL
Siemens POL 871

Functions	Status monitoring, setting of parameters of the Climatix controller, setting of operating modes, air flow, temperature, schedule, fault monitoring, etc.
Operating voltage	DC 24 V ±15 %
Operating temperature	-20 ... 60 °C
Protection per EN 60529	IP 65
Dimensions	173 × 96 × 22 mm (L × H × Th)

BUILT-IN VISUALIZATION 7" TOUCH PANEL
POL8T1.7X/STD
(controller integrated in HVAC)
1

Functions	Graphic representation of the unit, current status of the actuators and sensors, setting of operating modes, temperature, fan performance, fault monitoring
Operating voltage	DC 24 V
Communication	Ethernet
Protection per EN 60529	IP 65
Dimensions	227 × 153 × 40 mm (L × H × Th)

SPATIAL CONTROLLER SIEMENS
POL822.60

Functions	Setting of operating modes, temperature, fan performance, space temperature sensor
Operating voltage	DC 12 ...15 V
Sensor type	Resistance NTC
Measuring range	0 ... 40 °C
Protection per EN 60529	IP 30
Dimensions	120 × 86 × 23 mm (L × H × Th)

REGULATION TO CONST. FLOW/PRESSURE
UNICON CPG 1000AV

Operating voltage	DC 10 ... 24V
Output signal	0 ... 10 V
Measuring range	0 ... 1000 Pa
Operating temperature	-10 ... 50 °C
Protection per EN 60529	IP 54

CO2 SENSOR – CHANNEL TYPE TCO2C

Operating voltage	DC 24 ... 35 V / AC 24 V ±10 %
Output signal	0 ... 10 V
Measuring range	0 ... 2000 ppm
Operating temperature	-5 ... 50 °C
Protection per EN 60529	IP 65

CO2/TEMPERATURE/HUMIDITY SENSOR – SPATIAL TYPE
TCO2AU

Operating voltage	DC 15 ... 35 V / AC 24 V ±15 %
Output signal	0 .... 10 V
Measuring range	0 ... 2000 ppm; 0 ... 50 °C; 0 ... 100% RH
Operating temperature	0 ... 50 °C
Protection per EN 60529	IP 30

TEMPERATURE/HUMIDITY SENSOR – CHANNEL TYPE
TUTC0121

Operating voltage	DC 18 ... 35 V / AC 18 ... 24 V
Output signal Measuring range	0 ... 10 V -30 ... 50 °C; 0 ... 100 % RH
Operating temperature	-5 ... 50 °C
Protection per EN 60529	IP 65

ROUTER
TP-LINK TL-WR841ND

WiFi router	802.11b/g/n
Connection Interface	300 Mbps 4 10/100 Mbps LAN PORTS 1 10/100 Mbps WAN PORT
Operating voltage	9 V DC / 0.6 A
Operating temperature	0 ... 40 °C

3-WAY VALVE ACTUATOR
BELIMO LR24A-SR

Operating voltage	AC/DC 24 V, 50/60 Hz
Torque	5 Nm
Control	DC 0 .... 10 V
Operating temperature	0 ... 50 °C
Protection per EN 60529	IP 54

3-WAY VALVE

Medium	Cold water, hot water, water with glycol
Temperature of the	-10 °C ... 120 °C
medium	1400 kPa
Allowed pressure	Body and shaft = stainless steel, valve = forged,

MIXING NODE

Functions	**Regulation of heating water and heating output**
Assembly	Pump, 2x shut-off ball valve, 3-way valve with actuator, stainless steel flexi hoses, filter
Operating voltage	Pump - 1~230 V / 50 Hz Actuator - AC/DC 24 V, 50/60 Hz
Protection	IP 54

PLUG IN SOCKET

Functions	Electrical plug for main electrical connection
Voltage	230/400 V, 50 Hz

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