



FUNTIONAL DESCRIPTION - RECAIR E-SERIES HEAT RECOVERY UNIT

1. CONTROLS

Heat recovery unit can be controlled with:

- Internal time program
- Local control from Ouman M BA control panel
- Modbus RTU fieldbus
- External 0 - 10 V control signal

Control methods:

- Constant speeds
- Air flow control
- Duct pressure control

2. OPERATION

2.1 OPERATION DURING STANDSTILL

Extract fan is stopped, and damper is closed (if installed).

2.2 OPERATION WHEN THE UNIT IS STARTED

Damper (if installed) is opened when the unit is started from the control panel, with time program, with external start/stop signal or through Modbus RTU bus. Extract fan starts after delay which is freely adjustable (factory default 25 s).

2.2.1 CONSTANT SPEED CONTROL

With constant speed control extract fan is controlled with internal time program, local control or Modbus RTU bus. There is a maximum of three (3) speeds constant speeds available (Speed 1, Speed 2 and Speed 3).

2.2.2 AIR FLOW CONTROL

Fan speed is controlled based on the integrated air flow measurements. Air flows may have a maximum of three (3) setpoints (Airflow 1, Airflow 2 and Airflow 3).

2.2.3 EXTRACT DUCT PRESSURE CONTROL (accessory)

Fan speed is controlled based on the extract duct pressure measurement. Duct pressure may have a maximum of three (3) setpoints (Duct pressure 1-3). Extract duct pressure sensor is an accessory, and it can be installed to any suitable location and wired to a junction box inside the units extract air chamber located right before filter section.

2.2.4 BOOST AND TEMPERATURE LIMITING

The boost function can be activated with external on/off signal (24 V) or through Modbus RTU bus. The boost function increases the extract fan speed to maximum speed regardless of the possible time program.

Temperature limiting function decreases the extract fan speed linearly according to outdoor temperature when the outdoor temperature is below set limit.

2.2.5 NIGHT COOLING

Night cooling function can be activated from the Ouman M BA control panel or through Modbus RTU bus. Enabling night cooling function will increase the extract fan speed to maximum when extract air temperature and outdoor temperature conditions are met. Night cooling function can be controlled with a separate time program.

2.2.6 EXTERNAL ALARM

Extract fan can be stopped with external contact (fire alarm, emergency stop, external interlock) or through RTU bus (emergency stop). External alarm function closes the extract air damper.

2.2.7 DRAINAGE DEFROST

As default the drainage defrost is activated automatically when outdoor temperature drops below set limit (factory default +2 °C). The drainage defrost is active until outdoor temperature rises above limit. It is possible to set the drainage defrost always on or activate it through Modbus RTU.

2.2.8 FILTER

The extract air filter alarm limit is relative and changes according to the fan speed/air flow.

2.3 OPERATION WHEN THE UNIT IS STOPPED

Extract fan stops and extract air damper (if installed) is closed after closing delay (factory default 20 s).

3. ALARMS AND STATUS INDICATIONS

3.1 ALARMS

Alarms are divided into three (3) groups (A , B and C). Group A alarms will activate the alarm relay immediately and stop the unit. Group B alarms will activate the alarm relay immediately but will not stop the unit. Group C alarms will activate the alarm relay within the set schedule (e.g. Mon-Fri 08:00 - 16:00) but will not stop the unit.

- Extract fan contradiction, A
- Air flow deviation, B
- Duct pressure deviation, B
- Extract air filter (filter guard), C
- High extract temperature (factory default 50 °C), A
- Fan fault, A
- Emergency stop/Fire Alarm/External alarm, A

3.2 STATUS INDICATIONS

Extract fan status indication from potential free relay (NO) e.g. for heat pump or other external system.

| DEVICE ID | DEVICE NAME | TECHNICAL INFO SETTINGS | DEL. | ALARM | | | RESTRICTIONS | |
|-----------|----------------------------|--|------|-----------|------------|-------|--------------|------------|
| | | | | LOW LIMIT | HIGH LIMIT | DELAY | LOW LIMIT | HIGH LIMIT |
| FG30 | EXHAUST AIR DAMPER | 24 V, SPRING RETURN | CT | - | - | - | - | - |
| PDE30 | DUCT PRESSURE SENSOR | EXTRACT DUCT PRESSURE.0...500 Pa | CT | - | - | - | - | - |
| PDE31 | PRESSURE DIFF. TRANSMITTER | FILTER GUARD, 0...500 Pa | ES | 100 Pa | 150 Pa | 600 s | - | - |
| SU30 | EXTRACT FILTER | BAG FILTER, G4 | ES | - | - | - | - | - |
| TE30 | TEMPERATURE SENSOR | EXTRACT AIR, NTC10 | ES | - | - | - | - | - |
| TE40 | TEMPERATURE SENSOR | SUPPLY LIQUID, NTC10 | ES | - | - | - | - | - |
| LTO 75 | HEAT RECOVERY | DIMENSIONED BASED ON AIR FLOW | ES | - | - | - | - | - |
| TE41 | TEMPERATURE SENSOR | RETURN LIQUID, NTC10 | ES | - | - | - | - | - |
| TL45 | VALVE + ACTUATOR | HEAT RECOVERY CONTROL VALVE, 0 - 10 v | CT | - | - | - | - | - |
| PDE32 | PRESSURE DIFF. TRANSMITTER | HEAT RECOVERY PRESSURE LOSS, 0...1000 Pa | ES | - | - | - | - | - |
| TE31 | TEMPERATURE SENSOR | EXHAUST AIR, NTC10 | ES | - | - | - | - | - |
| FIE30 | AIR FLOW MEASUREMENT | FAN AIR FLOW, 0...1500 Pa | ES | - | - | - | - | - |
| PF30 | EXTRACT FAN | EC-MOTOR | ES | - | - | - | - | - |
| TEout | TEMPERATURE SENSOR | OUTDOOR AIR, NTC10 | ES | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - |
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