

LUMINA 38H

LUMINA 38H TOUCH

F38H



PRODUCT APPLICATION MANUAL

GB150630
Art. Nr. 7020070

The Lumina 38H controls the climate in mechanically ventilated poultry houses using a heat exchanger. The Lumina 38H is a special version with full integration of the heat exchanger control in the ventilation control.

Heat exchangers heat up the incoming air, using spent air from the house. Besides saving on heating costs, also the emission of ammonia is reduced.

The Lumina 38H can be applied worldwide in:

- Breeder houses
- Rearing houses
- Layer houses
- Broiler houses
- Turkey houses

The Lumina 38H ensures optimal conditions in your house under all circumstances. It distinguishes itself by a number of unique control options for extra user advantages with a well-organised and simple control.

The Lumina 38H controls the following concepts in combination with a heat exchanger:

- Fancom Combi
- Fancom EC-Combi
- Fancom MTT
- Tunnelventilatie

Features

- Very user-friendly user interface, graphical display (320 x 240 pixels), with variable menu.
- Access with optional password protection up to 3 different levels (average user, advanced user and installer), the so-called "Multi Level Data Protection".
- Complete implementation of the Fancom (EC-)Combi concept and the Fancom MTT concept (Minimum Transitional Tunnel).
- Extensive combi table with 32+16 set points, 16 combi relays, 1 linear/modulating part, 1 inlet control (or winter inlet), 1 tunnel control or summer inlet) and negative pressure.

Sensors

- Room temperature measurement using maximum 16 room sensors and temperature setting per 0.1°C.
- 1 RH measurement using 1 electronic RH sensor, 0-100 %.
- 1 Pressure measurement using negative pressure sensor, setting 0-100 Pa.
- 1 CO2 measurement using CO2 sensor 5000 PPM, setting in 0 – 5000 ppm
- 1 NH3 measurement using NH3 sensor, not available yet
- Weather station connection (outside temperature, outside RH, wind direction and wind speed).

Ventilation

- Ventilation is calculated based on animal weight or %.
- Maximum 8 ventilation zones.
- Ventilation control based on house temperature, with low and high temperature and relative humidity, CO2 and NH3 influence.
- Night correction on setpoint house and/or ventilation percentage, connected to a light clock.
- HumiTemp® control.

Exhaust

- Maximum 16 relays controlled, optionally combined with a linear fan control (Combi or EC-Combi).
- Linear fan control to control controllable fans (via triac, frequency controller, EC-fans, ITM) or modulating ON/OFF fans. Rotation (changing between fans) can be used with modulating fans.
- Up to maximum 4 ITM's can be controlled using the I/O network.
- Separate vortex damper control, linked to linear exhaust using a settable factor.

Inlet control

- 8 Inlet controls (8 zones) to control inlets or valves using the same setting. The valves can mutually be corrected based on temperature difference.
- 1 Tunnel inlet. Separate inlet control to control a tunnel shutter or curtain.

Curve

The following settings can be programmed in a curve (maximum 20 set points):

- Day number
- House temperature
- Extra temperature (e.g. for heating)
- Desired RH
- Animal weight
- Minimum ventilation (in m³/kg/h)
- Maximum ventilation (in % or a tunnel position)

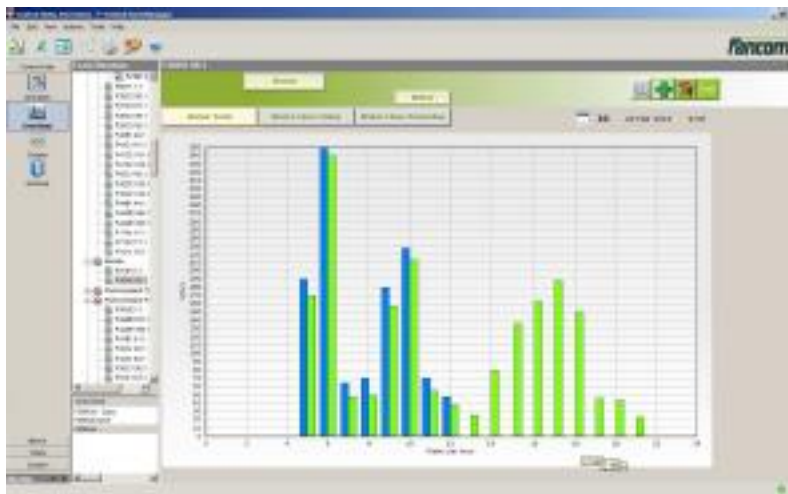
Heating / cooling / humidification

- 8 Heating controls, ON/OFF, time modulating, analog, based on their own sensor and linked to:
 - the house temperature or
 - an extra temperature (e.g. floor heating or brooders)
- 8 Cooling controls, ON/OFF or time modulating, based on their own sensor and linked to:
 - the house temperature or
 - the house temperature + bandwidth or
 - an extra temperature or
 - a tunnel position

- 1 Humidification control, ON/OFF or time modulating based on relative humidity in the house.
- Heat demand through F-Net; in combination with a central heating control (e.g. F21).
- OptiSec® control.

Time clocks and registration

- 1 Feed clock to enter maximum 24 start and stop times for feeding. Feed consumption is registered for a settable time interval (Management & Monitoring ®), of today, yesterday, day before yesterday and total. Dosing mode for restricted feeding is available.
- A pulsed weighing system or external weighing systems generating pulses (e.g. directly on an auger) can be used for registration. Feed flow (under- and overflow) alarm and maximum runtime alarm.
- 1 Water clock to enter maximum 24 start and stop times for water dosage. Water consumption is registered for a settable time interval (Management & Monitoring ®), of today, yesterday, day before yesterday and total. Dosing mode for restricted watering is available. A water meter can be used for the water registration. Water flow (leaks, underflow and overflow) alarm.
- 8 Light clocks to enter maximum 24 start and stop times. Setting possibilities: increase/decrease times (dimmer functions), settable light intensity (with light meter) and connection to light curve.
- 8 Time clocks to enter maximum 24 start and stop times. This time clock has several applications, but no registration functions.
- 32 Registration groups for feed, water or other purposes.
- From the D-version it is possible to register a maximum of 10 water lines per hour, and the total of all water lines.



Alarm

- 12 External alarms (free programmable) and application alarms via 1 alarm relay.
- Temperature differential signaling for giving a signal to an external automatic fire alarm system (AFAS).

Features heat exchanger

Temperature sensors

The heat exchanger will make use of the stall temperature and the outside temperature.

The following temperatures have been added:

- Intake temperature
- Exhaust temperature

Controls

The heat exchanger controls the following items:

- Intake fan
- Extraction fan
- Circulation fans
- Flushing the heat exchanger

Registration

According to the RAV, the following items must be registered (via FarmManager):

- Temperature curve achieved for intake, exhaust, outside, inside
- Operating hours counter for the heat exchanger
- Ventilation flow achieved in the heat exchanger
- Ventilation flow achieved in the circulation fans
- Temperature curve achieved

Flow measurement

To satisfy the RAV guidelines, the ventilation flow must be measured. There are 2 options for this:

- Measuring fan
- RPM feedback on the extraction fan

Frost protection

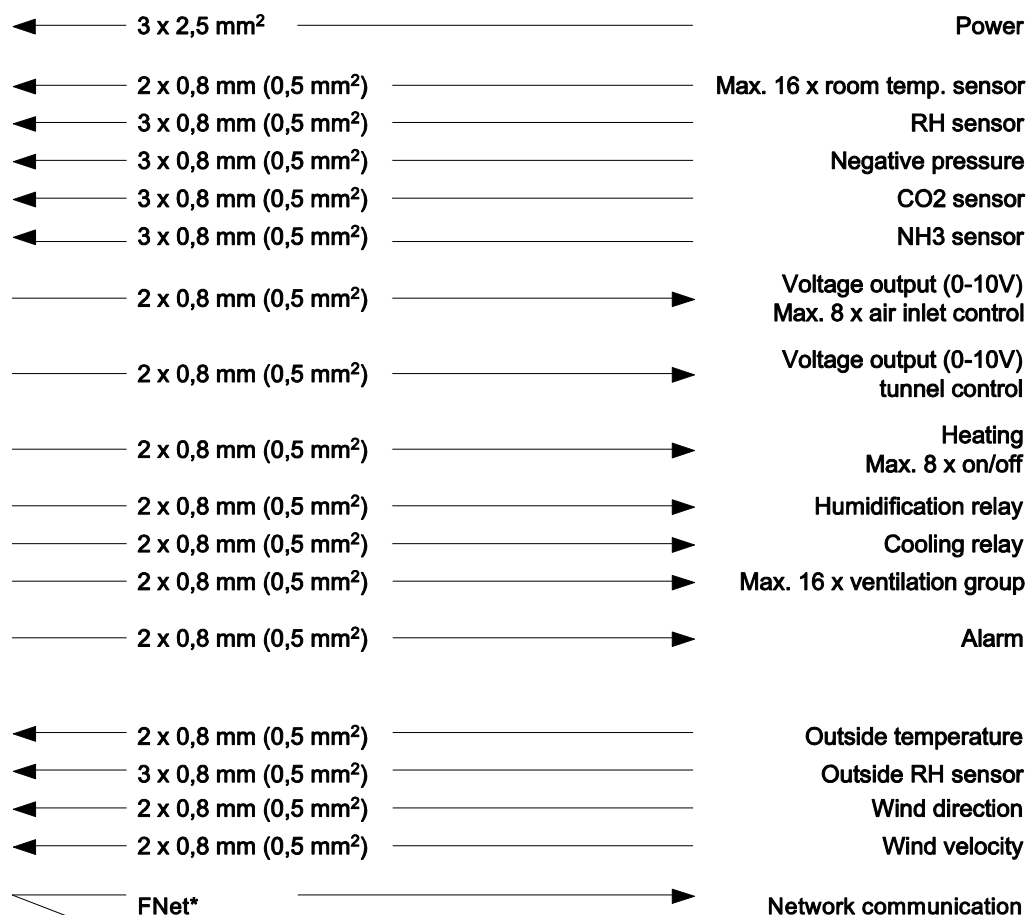
If the exhaust temperature becomes lower than the frost protection setting, then the frost protection is activated. The purpose of the frost protection is to protect the set of internal louvres from breakage through freezing. This set of louvres can get wet from flushing and condensation due to large temperature differences between the inside and outside temperatures. The moment the frost protection is activated, the intake fan is limited to a set %.

Efficiency

Thermal efficiency is expressed in the formula below:

Thermal efficiency = $(T_{\text{intake}} - T_{\text{outside}}) / (T_{\text{exhaust}} - T_{\text{outside}}) * 100\%$

Wiring



* Greenlink: 2 x 0,8 mm² twisted pair, unshielded
 ** Maximum 30 FNet modules in 1 network

Technical specifications

FDP45	
Mains voltage	90Vac – 264Vac
Mains frequency	50/60Hz
Maximum power consumption	45VA
IOB.12	
Power available for sensors	
24Vdc, fused	Max. 200mA
12Vdc, short circuit resistant	Max. 70mA
Power available for sensors and peripheral equipment	
24Vdc, short circuit resistant	Max. 500mA
6x analog outputs (AO)	
Voltage range	0 – 10Vdc
Maximum load	1mA
Output resistance	570Ω
12x analog inputs (AI)	
Type selectable through jumpers	Resistance or voltage
Resistance:	Temperature range sensor type S.7
	- accuracy (-25°C to +100°C)
	- accuracy (0°C to +60°C)
	Measuring range for position feedback
Voltage:	Measuring range (input resistance 100kΩ)
	Accuracy
8x Digital inputs (DI)	
Open contact voltage	12Vdc
Low level	<1.0Vdc
Application: Counter input, min. pulse width 25mSec	Max. frequency 20Hz
Application: Frequency input	Max. frequency 5kHz
16x Digital outputs (DO)	
1 – 8 connection for FRM.8 printed circuit board	
9 – 16 connection for FRM.8 printed circuit board	
Alarm contact	
Relay: make-and-break contact, voltage free	Max. 2A 60Vdc/30Vac
Communication	
I/O-Net for extra inputs and outputs using I/O-modules.	
FNet, Fancom network for intercommunication of control computers and PC connection.	
FRM.8	
8 Digital outputs (relays)	
Relay 1, 3, 5, 7: make-and-break contact	Max. 2A 60Vdc/30Vac
Relay 2, 4, 6, 8: voltage free	Max. 2A 60Vdc/30Vac
Housing	
Plastic housing with screw-on lid	IP54
Dimensions (l×w×h)	300×360×140mm
Weight (unpacked)	3.5kg
Ambient climate	
Operating temperature range	0°C to +40°C
Storage temperature range	-10°C to 50°C
Relative humidity	< 95%, uncondensed