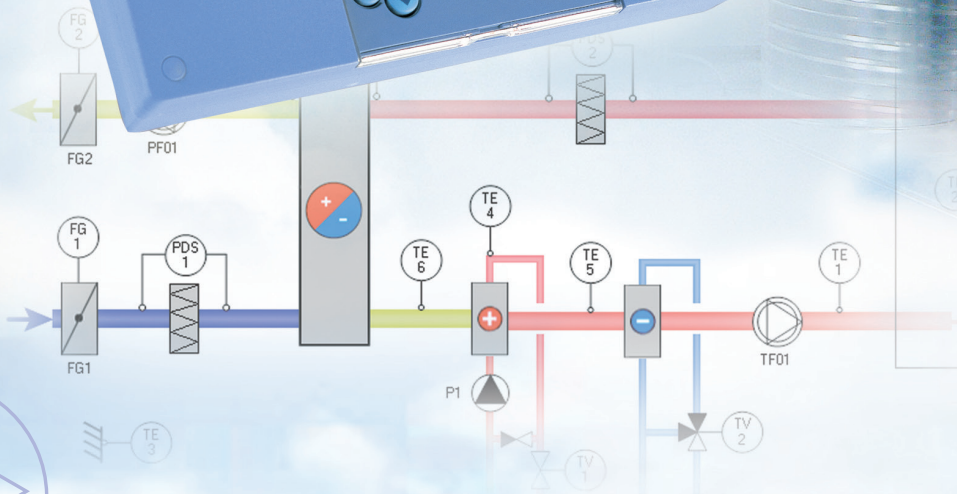
GSM-controlled

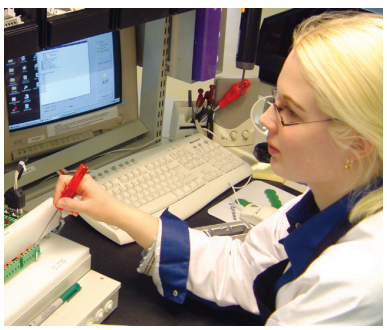
Air Handling Unit Controller

OUMAN EH-105



MODBUS ®

LONWORKS®



OUMAN

OUMAN EH-105

Ouman is number 1

Our 100% commitment to ease-of-use and control accuracy has put Ouman products on the road to success. Our products combine a knowledge of client needs and controller technology along with innovative designs and Finnish hi-tech know-how. Our products help to preserve nature through energy saving features and also make living environments safer and more comfortable.

The Ouman EH-105 is an intelligent air handling unit controller suitable for all kinds of demanding applications. The controller's flexible and innovative control solutions combined with its legendary usability is a package that only Ouman is capable of offering - and at a sensible price.

Ouman has received numerous awards:

- *First prize in the regional INNOSUOMI competition in 2000.*
- *The year 2001 building product.*
- *Tekniologiasta Tuotteiksi ('from technology to products') foundation's honorable mention in 2004.*
- *The region's successful enterprise in 2004, 2005, 2006, 2007.*
- *The strongest regional company in 2007.*

Ouman Finland Oy was granted the ISO 9001:2000 certificate in 2007.

Ouman Oy headquarters, Kempele, Finland

Easy to use

Ouman EH-105 is an intelligent air handling unit controller that is suitable for all kinds of applications. The controller's diverse and innovative control solutions are as easy to use as the other Ouman controllers that have a reputation for user friendliness.
An informative display with built-in help and intelligent solutions makes the EH-105 easy to install and commission and make changes during use. GSM Control makes it possible for EH-105 to be remote controlled and monitored via mobile phone.

Informative display

Ouman EH-105's logical user interface makes the controller easy to use for even non-professionals. The -button can be pressed to obtain additional information and instructions from the clear text display. The controller comes with three language options - Finnish, Swedish, English and Russian.

Exremely easy to install and commission

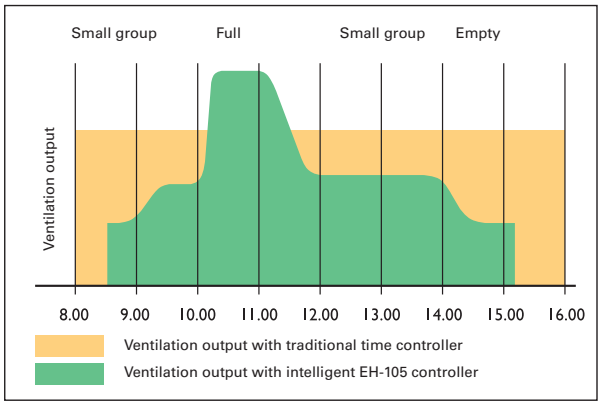
The Ouman EH-105 controller has been made very easy to install and commission. EH-105 differs from the traditional substations because it has control programs which the installer can take into use that have been programmed and tested at the factory. Factory settings correspond to real needs. All parameters can be changed to precisely meet the desired ventilation process.

Energy saving and comfort

Ouman EH-105 AHU controller offers more accurate and efficient control. The controller senses the quality of indoor air and controls air flow intelligently based on demand. On-demand air conditioning is more comfortable, protects building structures and the air handling unit and conserves energy.

Senses ventilation requirements

Bad indoor air quality reduces productivity and makes you feel tired. High relative humidity damages the building structure. The Ouman EH-105 AHU controller monitors indoor temperature, carbon dioxide levels and relative humidity and adjusts ventilation levels accordingly. Classrooms, auditoriums, assembly rooms, offices, etc. always have good air quality even though they are full of people. When there are less people in the room, the EH-105 controller automatically and efficiently reduces ventilation levels, conserving energy.



AHU controller for challenging conditions

The intelligent and versatile Ouman EH-105 AHU controller is suitable for many kinds of ventilation processes. It is particularly valuable when used in challenging residential buildings and business properties, schools and health care premises, where the requirements for ventilation control are high.
Ouman EH-105 can control both frequency-converter-equipped steplessly functioning ventilation devices and fixed-speed contactor-controlled (on/off) ventilation devices. EH-105 also has versatile alarm functions ja a patented readiness for GSM remote control and monitoring.

Intelligent ventilation

Need-based ventilation amounts to considerable savings in heating energy. EH-105 can be programmed, for example, not to start the ventilation device in the morning until the CO2 content of indoor air exceeds a set upper limit. Moreover, it can be programmed to stop the device when there is no more need for ventilation.

You can also use a motion detector to control the ventilation in your premises. EH-105 will switch the ventilation device on when there are people in the premises, and carry out a programmed post ventilation when the people are gone.

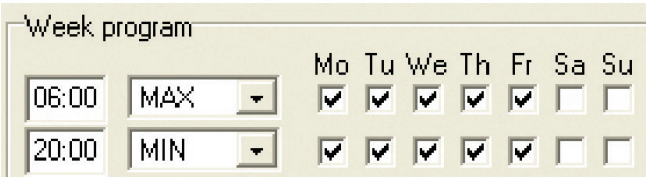
OUMAN EH-105

Intelligent start-up modes

EH-105 controller offers a multitude of automatic start-up modes. These modes guarantee that the AHU starts smoothly even at very low temperatures, and reduces the number of frost alarms.

Flexible time programming

EH-105 has exceptionally flexible built-in scheduling options that control the AHU operation. *The weekly/ 24-hour program* controls the daily running times according to a weekly schedule. *The special day program* offers an additional "eighth" day program for days that require a schedule different from any weekday.



With *the special calendar,* you can carry out a special day schedule on any weekday, or change the schedule of any weekday into that of another one. For example, if Boxing Day (26/12) is on Wednesday, the controller can be assigned to use Sunday settings.

The controller has a built-in automatic summer/winter changeover function.

Innovative control solutions

EH-105 AHU controller has been designed to meet the requirements for the most demanding applications in Scandinavia where, for example, the temperature gradients are large, the usage profiles of spaces change suddenly, and where the controllers have to react rapidly to large heating demands. EH-105 monitors all necessary environmental variables, and resolves any issues intelligently without adverse effects.

Operation mode display

Supply air display shows all variables that influence the supply air temperature.

AHU output display shows all variables that control the AHU output level.

Connection info display shows used and available inputs.

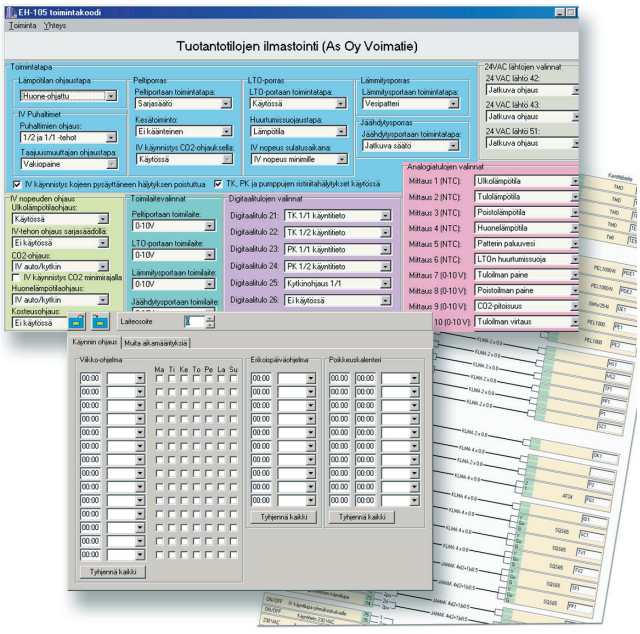
Free cooling mode

EH-105 minimizes requirements for mechanical cooling, saving energy by using outside air when the outside air temperature is below the space temperature.

Easily configured with a Windows -based configuration tool

The EH-105 configuration tool is freely available in **www.ouman.fi.**

The configuration tool allows the controller parameters to be fine-tuned to the specific application. The tool works both offline and online offering flexibility to program the controller off-site. The configuration tool also generates the connection diagram automatically.



"Clear and easy to use!"

Jarmo Kallio, Caretaker, YIT-Rapido

EH-105 AHU controller is clear and easy to use. The controller makes it very simple to review the alarm log and hours run. It notifies a problem with an alarm sound. Adding extra alarms and forwarding alarms to GSM phones is easy. The reason for the alarm is shown in clear writing on the display, which is important for the user in this daycare facility located in KOy Saarimaenkuja 8, Espoo.

Excellent usability

Flexible measurements

Ouman EH-105 can be connected to measure up to 18 variables:

- 11 analog inputs (6 NTC and 5 transmitter measurements)
- 7 digital inputs (volt-free contacts)

Analog inputs can also be used as digital inputs. The controller is networkable using LonTalk or Modbus protocols.

Comprehensive alarming

EH-105 controller has a built-in alarm system that monitors the measurement inputs and the status of the digital inputs. The alarms are prioritized to A and B according to their urgency.

Flexible control

EH-105 controller can also control one to five stages based on pressure measurement making it ideal for VAV installations. Electric heater control is an option.

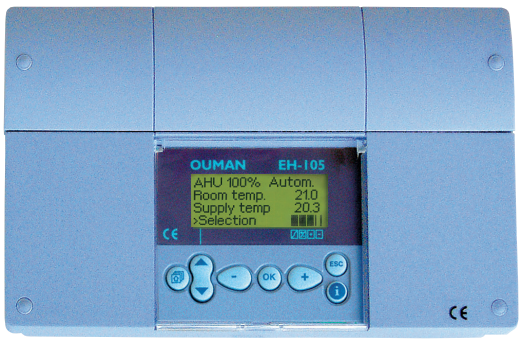
1 x Alarm Relay

1 x Bus

EIA 232C standard
RS 485 adapter card option
LON adapter card option
Modbus adapter card option

3 x relay outputs

Running permit for AC freq. converter
Fan half/full speed
AH running permit for distribution center



6 x NTC measurements

Outdoor temperature
Supply air temperature
Room temperature
Exhaust air temperature
Retun water temperature
Exhaust air temp. after heat recovery
Supply air temp. after heat recovery
Remote setting potentiometre

6 x 0-10 V outputs

Damper control
HRU control
Heating control
Cooling control
SF AC f. converter control
EF AC f. converter control

3 x 24 VAC outputs

Damper on/off
Indicator lamp
Running permit for cooling unit
Cooling pump conrol
HRU pump control
Heating pump control
Heating permission for electric heater
Zone damper control
Night heating control
Smoke damper control

7 x Digital Inputs (on/off)

External switch control
Emergency stop control
Running info
Pressure switches info
Pump running info
Alarm info from temp. relays
HRU defrost function
Air filter impurity info
Smoke alarm info
Electric heater overheat alarm
Maintenance STOP

5 x transmitter inputs

Supply air pressure
Exhaust air pressure
Room temperature
CO2 content
Room air humidity
Supply air flow speed
Exhaust air flow speed
Pressure difference over supply air filter
Pressure difference over exhaust air filter
Pressure difference over HRU
Pressure difference over supply fan
Presssure difference over exhaust fan

"Managing the total solution is easy."

Tomi Kuivalainen, Controls Engineer, Keravan Vakiosäätö

Installation and commissioning is fast. The flexibility of the controller guarantees that the changes can be made easily on site without a separate programming tool.

When renovating, it is possible for the controller to use existing actuators, which offers cost savings.

GSM Control makes site management easy without needing expensive central monitoring software. KOy Robert Hubertintie 2 is a good example of this. The site has 10 air handling units and 2 heating controllers installed to the same communication bus.

OUMAN EH-105

Remote control and remote monitoring

EH-105 allows different types of remote monitoring solutions. You can follow and control the events in your premises not only by using the controller display but also via your GSM phone or PC. This is how you avoid unnecessary checkup visits. Alarm messages can be sent directly to the GSM phones or email addresses of selected individuals. This is how you can react to different circumstances faster, and preempt possible problems.

Remote use via GSM phone

The EH-105 controller has a standard built-in GSM readiness. This patented feature gives you the possibility to manage the ventilation control of your premises via mobile technology.

The most common user functions can be carried out via inexpensive SMS.

You can use your GSM phone to

- read measurement data.
- check and edit settings and controls.
- receive and set off alarms.

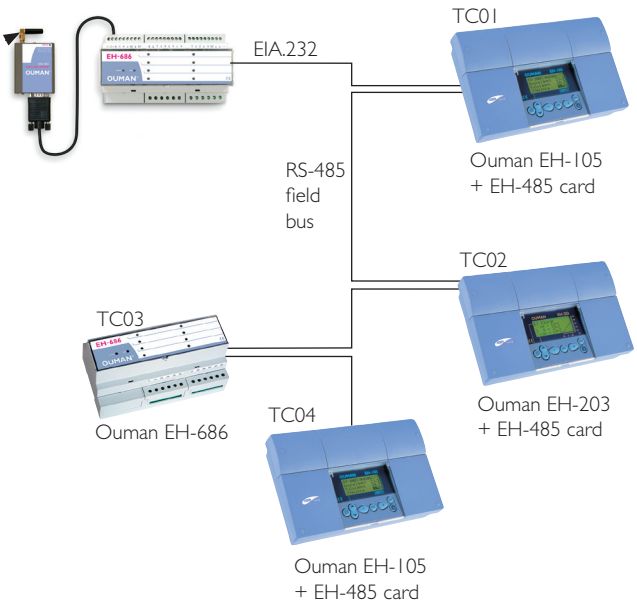
GSM-based monitoring solutions

1. One controller

The EH-105 controller can be used via GSM phone when a GSM modem has been connected to it. Controller alarms can be sent to two GSM numbers, and the alarms can be set off by SMS.

2. Several controllers

GSM monitoring can be carried out via RS-485 field bus. Several controllers can be connected to the field bus by installing a bus adapter card to each controller. A GSM modem is connected to RS-485 field bus with the help of an EH-686 master device that controls the bus communication. Each device connected to the bus is given an individual device code (e.g. TC01). This is how the system identifies which controller the user wishes to communicate with.



Extensive adaptability to different locations

Remote use via web browser

The EH-105 controller can also be used via web browser. Ouman EH-net is a new web server that makes it possible to use the Ouman control systems remotely with your PC via either internet or a local area network. Remote use is actualized through a graphic browser-based user interface independent from time and place.

With EH-net you can read real-time measurement data, view and edit settings, as well as receive and set off alarms. You can use EH-net to send different types of alarms directly to the email addresses and/or GSM phones of different recipients.

EH-net makes possible not only the remote use of one Ouman controller, but also the effortless management of several Modbus-connected Ouman devices via one single user interface.

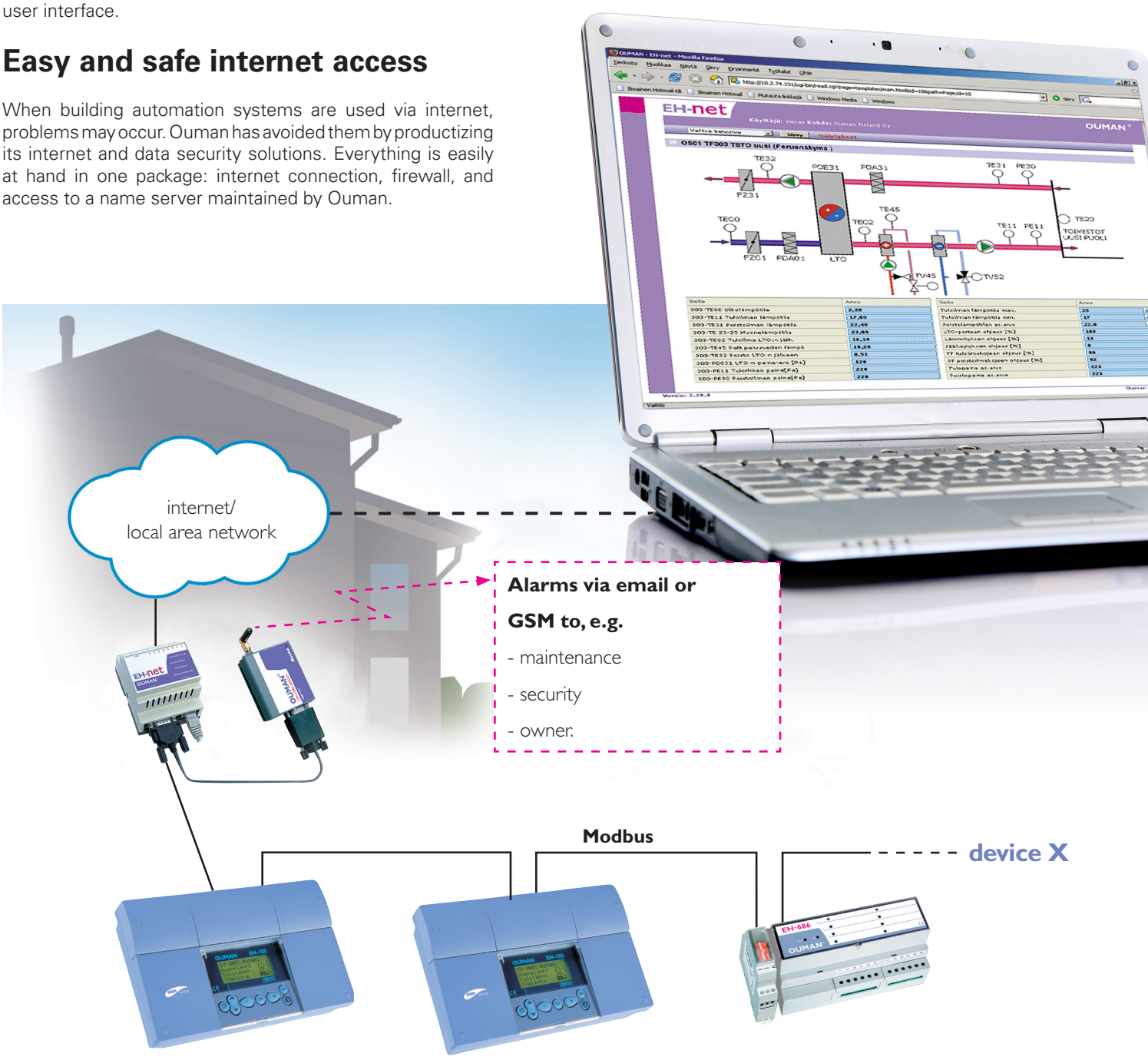
Easy and safe internet access

When building automation systems are used via internet, problems may occur. Ouman has avoided them by productizing its internet and data security solutions. Everything is easily at hand in one package: internet connection, firewall, and access to a name server maintained by Ouman.

You may try EH-net in our realistic test environment located in **www.ouman.fi.**

Other monitoring systems

You can connect EH-105 controllers to other monitoring systems by using either Modbus or LON bus. In this case, you must install either a Modbus or a LON bus adapter card (depending on the bus type) to each controller.



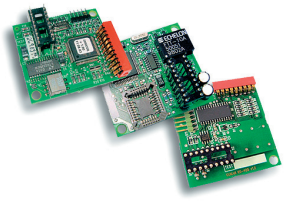
OUMAN EH-105 *Air Handling Unit Controller*

TECHNICAL INFORMATION

Operating voltage	230 VAC, 50 Hz, 0,2 A
Enclosure	PC/ABS
Protection class	IP 41
Dimensions; width, height, depth	width 230 mm, height 145 mm, depth 60 mm (with spacers 65 mm)
Weight	1,2 kg
Cabling options	From above or below (display and keyboard direction can be changed). Or through cable cut-outs inside the case.
Control algorithm	P, I and PID
Analog inputs	6 NTC inputs (temperature) and 5 transmitter inputs (temperature, CO2, pressure, air flow) Analog inputs can accept volt free contacts (load 5 VDC/ 0,5 mA).
Digital inputs	7 pieces Digital inputs can accept volt free contacts (load 6...9 VDC/ 10 mA).
230 VAC outputs	1 AHU running information
24 VAC outputs	3 pieces
Analog outputs	6 pieces 0-10 or 2-10 VDC
Relay outputs	2 x 230 VAC 6(1) A or 24 VAC/DC 6(1) A and 1 x 230 VAC 6(1) A
Alarm relay outputs	1 x 24 VAC/DC 1 A
Communication bus	EIA-232C (standard); RS-485 , LON or Modbus (option)
Time programs	• weekday program: max 7 switching periods • special day program: max 5 switching periods • calendar: max 10 exeption schedules
GSM Control	yes
Web-ready	yes
Operating temperature	0 ... +40 °C
Storage temperature	–20 ... +70 °C
EMC-directive	2014/30/EU, 93/68/EEC
-Immunity	EN 61000-6-1
-Emissions	EN 61000-6-3
Low voltage directive	2014/35/EEC, 93/68/EEC
-Safety	EN 60730-1
Warranty	2 years
Manufacturer	Ouman Oy

EH-105 ACCESSORIES

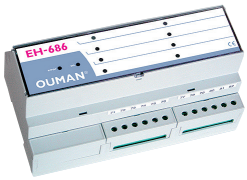
Channel adapter cards



OUMAN EH-485, LON-100 ja MODBUS-100

EH-485, LON-100 and MODBUS-100 plug-in communications cards transform EH-105 controller suitable for RS-485, LON or MODBUS networks. RS-485 Modbus option offers cost-effective option to network large number of controllers to any Modbus RTU compliant master. Multiple controllers can also be connected via RS-485 network to a single GSM module.

Input/output control module



OUMAN EH-686

Input/output module with relays, analog and digital inputs and analog outputs. EH-686 can be used for time-controlled relay applications or for alarms through digital inputs. EH-686 can also be used as the RS-485 master device for the controller network.

GSM modem

OUMAN GSM/GPRS

By connecting a GSM modem to the controller, a mobile phone can be used to monitor and control plant via text messages.
You can also purchase a business level GSM connection for machine communication from Ouman (available only in Finland).

EH-net server

OUMAN EH-net

EH-105 can be remotely used (browser based) in the Ethernet network using EH-net server. The EH-105 controller must have a modbus-100 adapter card to enable an EH-net connection. You can also obtain network and information security solutions from Ouman.

Panel mounting kit

OUMAN PAN-200

Panel mounting kit allows EH-105 controller to be mounted, for example, inside other manufacturers equipment.

Ouman reserves the right to change the specification without prior notification.

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www.ouman.fi

QUALITY SYSTEM CERTIFICATION DNV·GL ISO 9001