

Heat Interface Unit - EHIU1

Product Specification Sheet



- With minimized flow it is possible to contain pipeline dimensions, reducing costs and simplifying installation.
- A low flow system allows reduction of the pump size. Also electricity consumption is reduced when pipelines are designed for reducing total system pressure drop.
- A low flow system combined with low pressure drop pipelines facilitate balancing due to low pressure drop from the main risers of the plant.
- Low return temperature conditions guarantee best performance for generation system such as condensing boiler, district heating system, heat pump systems, etc.
- High ΔT° allow to reduce the measures errors of meters (ref EN1434, UNI10200).

EHIU1 Advantages

- Electronic controller with PID algorithm allows to design a safer and comfortable DHW ΔT° characteristic curve.
- Higher safety level: no gas and combustions inside each flat. A single centralized boiler is safer and better controlled. Hot water produced instantaneously directly into the flat increases hygiene safety.
- Only 3 pipes needed: one single rise can be used both for heating and domestic hot water production. Less costs of materials and installation. No ventilation system needed.
- Pipes and heat exchanger insulation reduces heat losses.

Certifications

- CE
- ACS
- RT2012 Titre V

General Description and application

- The HyBo (Hydraulic Interface Unit) is a hydraulic interface installed in multi-family dwellings between the centralized systems and each flat.

It allows combining the efficiency of a centralized boiler with the benefits of individual control and metering.

EHIU1 is one of the models available for the HyBo family.

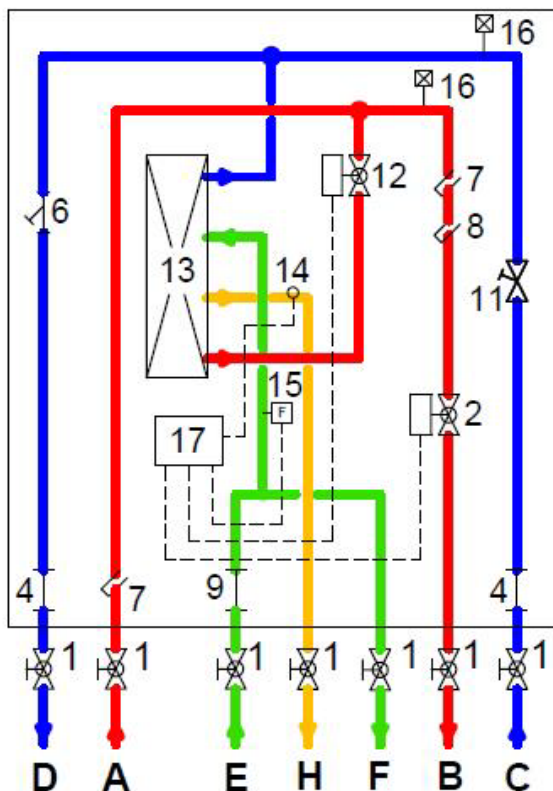
Main functions managed by the EHIU1 unit are:

- Heating: hydraulic interface between main rise and flat with high temperature output, balancing, metering, on/off control from room thermostat.
- Domestic hot water (DHW) instantaneous production.
- Domestic cold water (DCW): hydraulic interface between main rise and flat, metering.

The typical heating systems where the EHIU1 can guarantee the best performances are designed basing on variable flow characteristics, with high ΔT° and low return temperatures:

- High ΔT° conditions, allow minimizing nominal water flow and a more flexible distribution system.

Hydraulic scheme



The HIU1 unit includes:

- 1 Manual isolation valve
 - 2 Two-way on/off motorized valve
 - 4 Blind pipe for energy meter
 - 6 Strainer
 - 7 Heat meter temperature sensor pocket
 - 8 DPCV pressure sensor pocket
 - 9 Blind pipe for cold water meter
 - 11 Static balancing valve
 - 12 Two-way modulating motorized valve
 - 13 Heat exchanger
 - 14 DHW temperature sensor
 - 15 Flow meter
 - 16 Manual air vent
 - 17 Electronic control
-
- A Heating supply from centralized system
 - B Heating supply to apartment
 - C Heating return from apartment
 - D Heating return to centralized system
 - E Domestic Cold Water (DCW) inlet
 - F Domestic Cold Water outlet to apartment
 - H Domestic Hot Water (DHW) outlet to apartment

Working principles

The unit provides the following main functions:

- **Heating control:** the motorized on/off valve receives a command from an external thermostat (not included) and allows opening and closing of the heating circuit.
- **Domestic Hot Water (DHW) Production:** the production instantaneous and obtained through a heat exchanger. The temperature control of the output is controlled by an electronic system operating with a PID algorithm and a modulating valve provided with an equal-percentage regulation disk in order to increase the efficiency and the precision of the regulation. Electronics guarantee safe, comfortable, quick and efficient control of the temperature characteristic curve, and a good stability even at low flows.

When the hot water tap in the bathroom is opened the flowmeter registers the request and send a signal (with the flow value) to the electronic controller. The electronic controller closes the on/off valve so all the heating fluid is sent to the heat exchanger (priority to DHW production). The domestic cold water goes directly into the heat exchanger to be heated.

The temperature probe sends the DHW temperature information to the electronic controller, which regulates the opening level of the modulating valve to have exactly the heating fluid flow needed to reach the set temperature for the DHW.

When there are variations in DHW flows, the system reacts immediately to come back as quickly as possible to the set temperature and keep it stable.

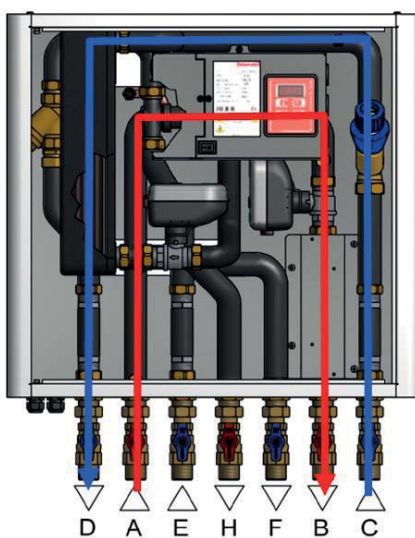
Optional functions: warm heat exchanger function for faster response, eco-function to avoid unnecessarily activations of DHW production.

Examples of working conditions for DHW production

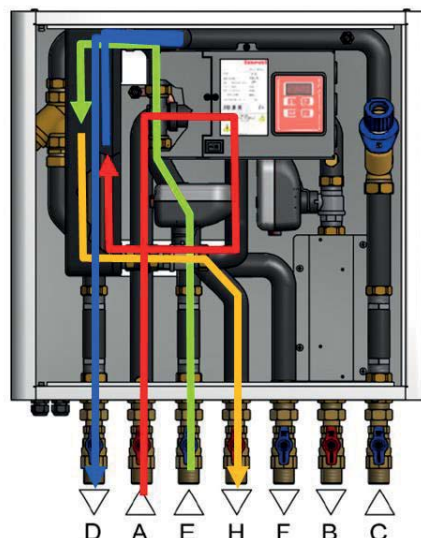
					24 plates heat exchanger			40 plates heat exchanger		
DCW Temp.	DHW Temp.	DHW flow	Heating supply Temp.	Capacity	Heating return Temp.	Delta T° Heating	Heating flow	Heating outlet Temp.	Delta T° Heating	Heating flow
°C	°C	l/min	°C	kW	°C	°C	m³/h	°C	°C	m³/h
10	45	10	60	24.3	24.7	35	0.16	20.5	40	0.15
10	45	10	65	24.3	22.2	43	0.14	18.3	47	0.12
10	45	15	60	36.4	28.1	32	0.27	23.1	37	0.24
10	45	15	65	36.4	25.4	40	0.22	20.7	44	0.20
10	45	20	60	46.2				25.2	35	1.22
10	45	20	65	46.2	28.0	37	1.15	22.7	42	1.01
10	50	10	60	27.7	31.5	29	0.85	26.2	34	0.72
10	50	10	65	27.7	27.5	37	0.65	22.6	42	0.58
10	50	15	65	41.6	31.3	34	1.09	25.6	39	0.93
10	50	20	65	52.7				28.1	37	1.32

- Balancing: the unit is equipped with a Honeywell Kombi-3-plus in order to provide a static balancing of the heating circuit. As option it can be added, also after the installation, a diaphragm (not included, see accessories) to upgrade to differential pressure automatic balancing.
- Metering: the unit has a predisposition for 2 heatmeters and 1 water-

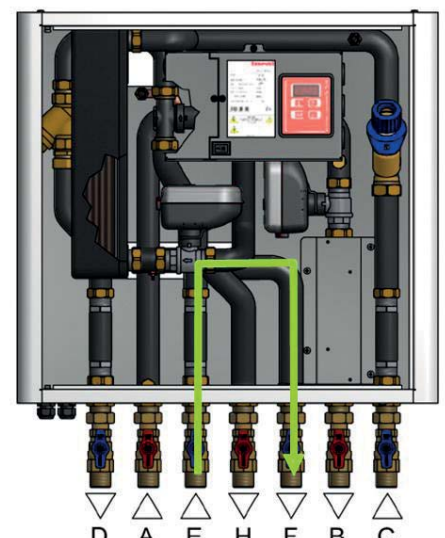
meter (not included, see accessories). The first heatmeter will measure the total energy consumption both for heating and DHW production; if installed, the second heatmeter will measure the energy consumption for heating only: as a difference it can be calculated the energy consumption for DHW production only.



Apartment heating circuit



DHW production circuit



DCW line

Product codes

	Description	Cabinet
EHIU1-840SIF	EHIU1 with high capacity heat exchanger (40 plates)	no
EHIU1-840SIC	EHIU1 with high capacity heat exchanger (40 plates)	yes
EHIU1-824SIF	EHIU1 with standard heat exchanger (24 plates)	no
EHIU1-824SIC	EHIU1 with standard heat exchanger (24 plates)	yes
EHIU1-CAB	Stand-alone cabinet	

Technical data

Heating circuit to/from flat	
Kind of fluid	Water VDI 2035 (max glycol 30%) ¹
Max. temperature	90 °C
Max. operating pressure	6 bar
Max. Flow rate	1.5 m³/h
Nominal flow rate	1.25 m³/h
Kvs value (m³/h)	(A-B)+(C-D) ² : 2.68 (static balancing), 2.18 (automatic balancing) ³
Heating circuit to/from heat exchanger	
Flow control	Electronic controller with PID algorithm Motorized modulating valve with equal-percentage regulation disk
Max. Flow rate for quite operation	~1.3 m³/h
Kvs value (m³/h)	(A-D) ¹ : 1.76 (24 plates); 1.88 (40 plates)
Domestic cold water (DCW) line	
Kind of fluid	Water max hardness 15dGH and pH 7-9
Max. temperature	30°C
Max operating pressure	6 bar
Max. Flow rate	According to meter characteristics
Nominal flow rate	According to meter characteristics
Kvs value (m³/h)	(E-F) ¹ : 5.06
Domestic hot water (DHW) line	
DHW production device	Braze welded heat plate exchanger in stainless steel
Temperature control	Electronic controller with PID algorithm
Kind of fluid	Water max hardness 15dGH and pH 7-9
Max. temperature	60°C (max set-point)
Max. operating pressure	6 bar
DHW production flow activation	3.5 l/min (programmable)
DHW production flow deactivation	2.5 l/min (programmable)
Max. flow rate	22 l/min ⁴
Kvs value (m³/h)	(E-H) ¹ : 1.83
Pipes and connections	
Pipes material and size	Copper, Ø18 x 1 mm
Connections material and size	Brass - G 3/4" M
Motorized Valve	
Operation time ON/OFF valve	15 sec
Operation time Modulating valve	15 sec

Electrical supply	
Voltage, Frequency	230 V ±10%, 50 Hz
Max. power consumption	10 W
IP protection (IEC 60529)	20
Supports	
Hydraulic support material	Galvanized sheet 1 mm
Cabinet/frame and door material	Pickling sheet 1 mm
Cabinet/frame and door color	RAL 9010
Ambient conditions	
Installation	indoor
Ambient temperature range	5-55°C
Humidity range	25-85% (must not condense)
Other characteristics	
Balancing	Static (dynamic as option)
Metering	Predisposition for 2 heatmeters and 1 watermeter
Insulation	Heat exchanger and pipes
Weight (no fluids inside)	18 kg (24 kg with cabinet)

1.Warning: installing accessories in replacement of the stub pieces can reduce the percentage of permitted glycol

2.check hydraulic scheme. Kvs are calculated without meters: in case of meters installed consider also the Kvs of meters installed

3.the Kvs values refer to the static balancing valve set at 5.9 (pre-setting) and at 1.5 for the DP automatic valve

4.Physical limits for quite operation. Real max flow depends on target system parameters

Installation

The unit is designed for indoor installation, with two options:

- Basic frame version (without cabinet): in a dedicated closed technical space.
- Wall hanging (with cabinet): suitable for retrofitting wall hanging boilers in old or new buildings.

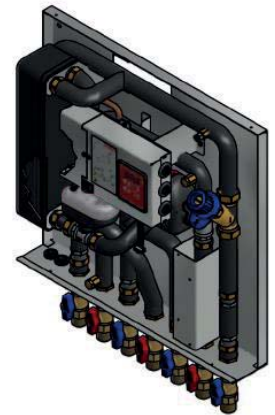
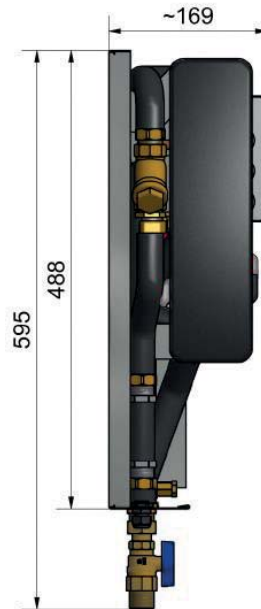
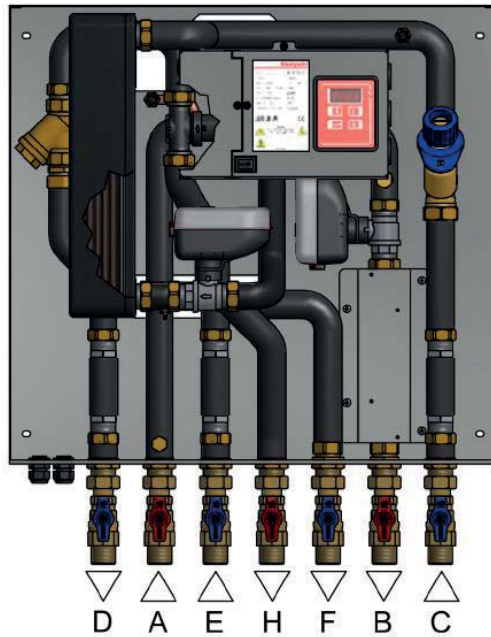
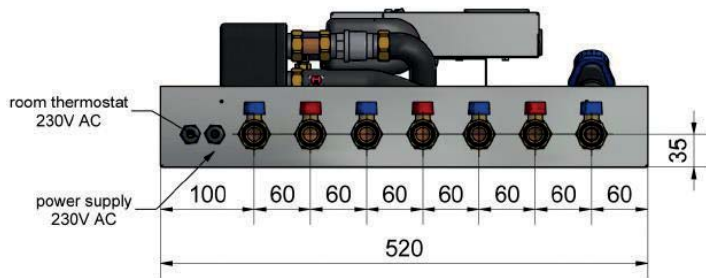
The following indications must be respected:

- Install the product in a vertical wall able to support the weight in operating conditions.
- All connections from the bottom (see hydraulic scheme).
- Install the product in a place protected from frost.

Electrical connections

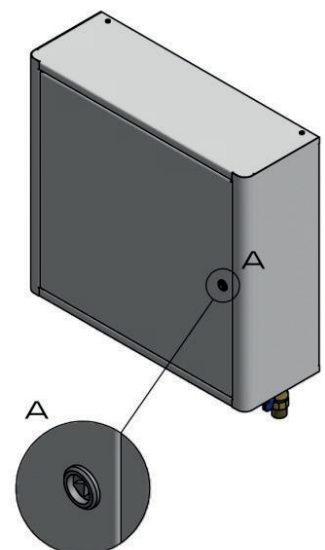
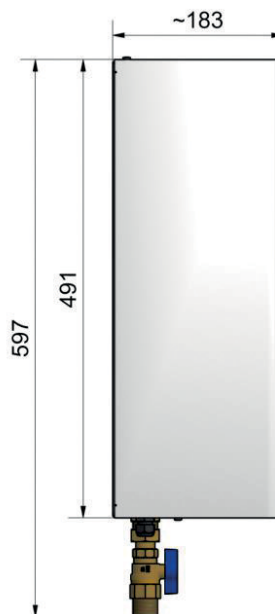
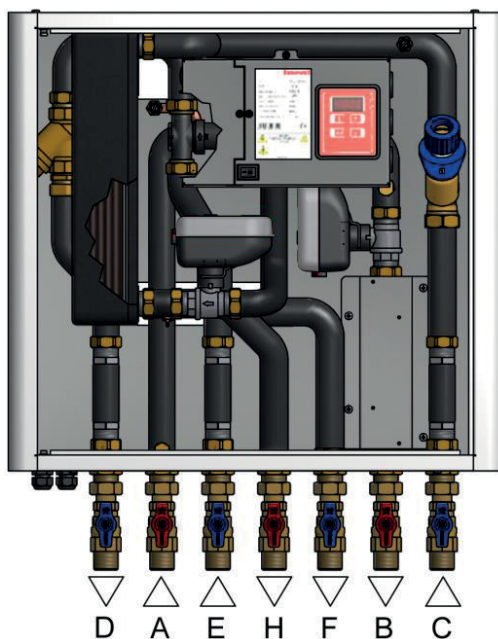
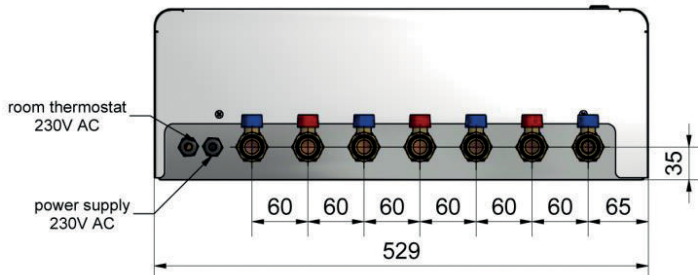
- Electric supply cables: min. 3 x 1.5mm²
- Room thermostat: 2 x 0.75mm²
- M-Bus connection: 2 x 0.75mm²

Dimensions



LEGENDA

- A. Heating supply from centralized system
 - B. Heating supply to apartment
 - C. Heating return from apartment
 - D. Heating return to centralized system
 - E. Domestic cold water (DCW) inlet
 - F. Domestic cold water (DCW) outlet to apartment
 - H. Domestic hot water (DHW) outlet to apartment
- All Hydraulic screwed connections according to ISO 228/1 G3/4" M



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Accessories

Meters and M-bus masters

- Optimal combination

R Possible alternative for later installation of remote readout system - additional parts required

	EW1100AC1200	EW1101AC1200	EW1050AP1200	EW1051AP1200
	Singlejet water meter Q3=2.5m³/h DN15 30°C 110 mm length	Singlejet water meter Q3=2.5m³/h DN15 90°C 110 mm length	Singlejet water meter Qn=1.5m³/h DN15 30°C 110 mm length	Singlejet water meter Qn=1.5m³/h DN15 90°C 110 mm length
Interface	None	None	Pulse output	Pulse output

Ultrasonic heat meters

EW7730A1200	Qp=1.5m³/h DN15 110 mm length for heating	None	•	•	R	R
EW7730F1200		RF			R	R
EW7730K1200		M-Bus + 2 pulse inputs			•	•
EW7730M1200		M-Bus				
EW7731A1200	Qp=1.5m³/h DN15 110 mm length for heating and chilled water	None	•	•	R	R
EW7731F1200		RF			R	R
EW7731M1200+ EWA3022074		M-Bus + 2 pulse inputs			•	•
EW7731M1200		M-Bus				

Multijet heat meters

EW447A1200	Qp=1.5m³/h DN15 110 mm length for heating	None	•	•		
EW447P1200		Pulse output			•	•
EW447M1200		M-Bus				
EW450A1200	Qp=1.5m³/h DN15 110 mm length for heating and chilled water	None	•	•		
EW450P1200		Pulse output			•	•
EW450M1200		M-Bus				

	EW1100AC1200+ EWA110C1520-RF	EW1101AC1200+ EWA110C1520-RF	EW1100AC1200+ EWA110C1520-MBUS	EW1101AC1200+ EWA110C1520-MBUS
	Multijet water meter Q3=2.5m³/h DN15 30°C 110 mm length	Multijet water meter Q3=2.5m³/h DN15 90°C 110 mm length	Multijet water meter Q3=2.5m³/h DN15 30°C 110 mm length	Multijet water meter Q3=2.5m³/h DN15 90°C 110 mm length
	Interface	RF	RF	M-Bus

Ultrasonic heat meters

EW7730A1200	Qp=1.5m³/h DN15 110 mm length for heating	None				
EW7730F1200		RF	•	•		
EW7730K1200		M-Bus + 2 pulse inputs			•	•
EW7730M1200		M-Bus			•	•
EW7731A1200	Qp=1.5m³/h DN15 110 mm length for heating and chilled water	None				
EW7731F1200		RF	•	•		
EW7731M1200+ EWA3022074		M-Bus + 2 pulse inputs			•	•
EW7731M1200		M-Bus			•	•

Multijet heat meters


EW447A1200	Qp=1.5m³/h DN15 110 mm length for heating	None				
EW447P1200		Pulse output				
EW447M1200		M-Bus			•	•
EW450A1200	Qp=1.5m³/h DN15 110 mm length for heating and chilled water	None				
EW450P1200		Pulse output				
EW450M1200		M-Bus			•	•

NOTE: Qp is used for heat meters, Qn is used for water meters to EN1434 and Q3 is used for water meters to MID.


NOTE: To evaluate properly RF applications it is suggested to contact Honeywell personnel.

EW535M5777	Izar-Center 60 M-Bus master for max. 60 M-Bus meters
EW535M5778	Izar-Center 120 M-Bus master for max. 120 M-Bus meters
EW535M5780	Izar-Center 250 M-Bus master for max. 250 M-Bus meters
EW535M5781	Izar-Center 60 Memory M-Bus master for max. 60 M-Bus meters, data logger with 256 MByte memory
EW535M5782	Izar-Center 120 Memory M-Bus master for max. 120 M-Bus meters, data logger with 256 MByte memory
EW535M5783	Izar-Center 250 Memory M-Bus master for max. 250 M-Bus meters, data logger with 256 MByte memory
EW535M0131	M-Bus Receiver 868MHz Hydro-Radio 868 receiver for stationary installation with Izar-Center 60/120/250 interface

Balancing

V5012C0103		Diaphragm for differential pressure automatic balancing 10 to 30 kPa
V5012C0306		Diaphragm for differential pressure automatic balancing 30 to 60 kPa

Apartment heating controls

EvoHome		Room thermostat, programmable multizone
TH232-AF-230-OEM		Room thermostat, weekly programmable 230Vac

Water treatment

NK300SOFT-1/2A	Heating water softening device
NK300VE-1/2A	Heating water desalinization device

Additional information for a correct design of the system

- The unit performs properly if working conditions of inlets (flows, temperatures, pressure) are aligned to planned conditions.
- Consider a proper balancing of the hydraulic system.
- Assume a correct diversity factor of the DHW consumption in the building.
- Use an electronic variable pump.
- Consider a by-pass at the end of the main rise.
- When possible, avoid too long distances between main rise, EHIU1, DHW terminals.
- Consider proper pipings insulation.
- Heating water must be according to VDI 2035.
- Domestic water hardness must be below 15dGH and pH 7-9.
- It is suggested to install the units in a protected space outside the apartments.

Environmental and Combustion Controls

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