

# HIU Performance Specification

The contractor shall install a wall mounted ModuSat XR/XR-ECO® (or equal and approved) twin plate heat interface unit, which will provide heating and hot water fed by LTHW from a communal or district heat network. The unit will provide a complete remote surveillance and billing solution wired back to a centralised data logger via a TCP/IP Ethernet network or RS485 Bus network, facilitating SmartTalk® unique 2-way communication.

The twin plate units will comprise of 2 plate heat exchangers; one for heating and another for the instantaneous production of domestic hot water. The available standard plate outputs are up to 100kW for DHW and up to 15kW for heating. However, larger sizes can be provided for specific applications subject to project requirements and system parameters. The plates provide a hydraulic break between the primary and secondary circuits with a circulation pump on the heating circuit, a;; contained in white enamel coated insulated casing. The plate heat exchangers will be factory fitted with a dual insulation jacket made from EPP.

The unit equipped with climatic control via a modulating PICV and weather compensation via a centralised temperature sensor, with data sent via the TCP/IP Ethernet or Bus network.

## **The essential features of the unit are: -**

- BESA tested with a maximum high temperature test VWART of 34°C
- Maximum heat loss during keep warm (BESA test 4a and 4b) of 40W
- Pre-payment ready
- MID approved, Class 2 Ultrasonic heat meter with a nominal flow rate of 1.5 m<sup>3</sup>/h
- SmartTalk® remote communication
- Variable speed pump with dT control and dry run protection
- Two Pressure Independent Control Valves (PICVs) to provide flow regulation, differential pressure control and energy flow control (One for heating and one for domestic hot water)
- Modulation of PICVs to control flow through the plate heat exchanger and provides the ability to adjust the heating and domestic hot water outlet temperatures
- Flow sensor on the potable water inlet to ensure fast hot water response time and optimised PICV modulation
- Two stage low pressure electronic switch with pressure sensor on secondary heating side that shuts down the pump and sends an alarm to the room unit and data logger. (At 0.7 bar an alarm is sent to the ViewSmart room controller, and at 0.5 bar the pump shuts down to prevent system damage and no heating is provided.) Also allows remote monitoring of system pressure
- Braze-welded stainless-steel plate heat exchangers for heating and hot water production
- Dual insulation jacket on the plate heat exchangers
- Fully insulated pipework and casing as standard
- Domestic hot water priority control
- Optional external mains cold water meter (connected to the control board within the HIU for combined billing)

- Ability to pick up pulse form electricity meter to display electricity usage via room controller (for extra BREEAM credits)
- Optional overheat protection on the heating flow temperature to provide additional protection for sensitive floor finishes where underfloor heating is installed if required
- Strainer on primary flow inlet and secondary heating return
- Inbuilt heating circuit expansion vessel and pressure relief valve
- External filling loop
- To provide optimum heating and hot water performance at heat network primary flow temperatures as low as 60°C or even 55°C
- To provide domestic hot water return temperatures as low as 15.6°C

Fitted externally from the unit, an ambient programmable room controller (ViewSmart) enables the end user to control the timing and temperatures and to read the energy consumption.

## **Controls and Surveillance**

### **Data Logger**

All units will be connected via a hard-wired Bus, Ethernet or Fibre Optic network to communicate with the data logger. The data logger is available in a range of sizes to suit the development configuration and number of dwellings. The data logger is a centralised unit for reading and management of the units and is used for adjustment and heat metering for heating and DHW production systems. After appropriate setting and configuration, the data logger enables dialogue with each of the individual units, making possible the following:

#### Unique Two-Way Communication

- The download of consumption data for individual utilities
- Remote fault diagnosis
- Remote warranty validation (commissioning) of units
- Remote HIU configuration including max flow rate; heating / hot water temperature set points; and maximum secondary return temperature
- To send firmware updates to units and to room controllers
- Remote system management
- To modify metering unit configuration parameters
- To read individual unit status
- To make motorised element of the unit function (pumps, valves, etc.)
- Provision of end user remote assistance
- To run network diversity test

### **On Unit**

The unit will feature a module with the following functionality –

- Automatic adjustment and control of the flow rate through the unit, which modulates to suit the secondary circuit load
- Variable speed pump with PWM control ensuring a constant delta T through secondary heating circuit

- Primary differential pressure control
- Water flow monitoring of the primary heating circuit
- Primary flow and return temperature measurements
- Modulation of heating PICV to control flow through the plate and thus adjust the temperature suitable for radiators and UFH circuits
- Modulation of hot water PICV to control the hot water temperature
- Operation of full priority on DHW production
- Eco or comfort setting for the hot water. In comfort the hot water plate heat exchanger is kept warm for faster hot water production, and in Eco mode it is allowed to cool down
- Timed keep warm control, which allows the resident to set up a schedule ensuring fast hot water response time at peak times, but also allows the keep warm function to switch off and for the plate to cool down when the resident is out or asleep, reducing energy consumption and cost
- Supply and return temperature monitoring of the apartment heating circuit
- Remote reading of pressure in secondary heating circuit

The unit should be supplied with the ViewSmart Room Controller for end user control of the room temperatures and hot water requirements.

#### **ViewSmart Room Controller Key Functionality**

- Simple to use controller with backlit display
- Fault alarm shown on display
- Holiday settings
- Summer and winter operation programming
- Programming of heating schedules and the hot water keep warm function
- Enable apartment heating to function with weather compensation in conjunction with data received from only one outdoor sensor via the master panel in plant room
- Ability to read the heat meter, water meter, cooling meter, and electricity meter where fitted
- Ability to view remaining credit and heating and/or cooling cost (where PaySmart® is used)
- Ability to upgrade to an optional ENE3 compliant model for BREEAM credits via software upgrade
- 2 zone control option for Part L 2010 Building Regulations compliance (Requires two ViewSmart room controllers, one for each zone and external 2 port valves)
- Night set back facility

#### **Remote Monitoring & Billing**

The equipment shall enable the end user to view and download energy readings, consumption figures and credit details and send alarms to alert of any potential heating or hot water issues.

The equipment shall have the function for automated meter readings to be sent to the dedicated Metering & Billing provider in a .csv file on a daily basis.

The system shall also have the facility to include the Pay As You Go (PAYG) technology, which enables the end user to pay for their energy in advance via PayZone, Direct Debit, Online or Telephone, should this be required. The pre-payment facility is to be supplied without the addition of any external wiring, valves or ancillary equipment being required.

### **Remote Commissioning & Warranty Validation**

Remote commissioning and warranty validation of unit's will be carried out by the supplier in line with the site programme and completion / handover dates, with 10% of the remotely commissioned units checked by an engineer on site.

The units are to have a 2-year parts and labour warranty. Enhanced warranty options should be available.