

**Electrical Installation Requirements**

Care should be taken to separate the power and signal cables to prevent electrical interference and possible damage due to inadvertent connection.

The outputs are unsuppressed.

The plant inputs are electrically isolated. A volt free contact should be connected for the logical conditions stated below between the input and common (14).

**CE Conformance**

This unit conforms with the relevant EU standards when installed according to the JTL Installation Requirements for this product.

Digital Outputs				
1	LN DQ1	3 4	Unsuppressed	Watchdog
2	LN DQ2	6 5	Unsuppressed	Not used
Digital Inputs				
1	14 11		Volt Free	Plant healthy
2	14 12		Volt Free	Flow pulse
3	14 13		Volt Free	Auto
Temperature Inputs				
1	28 27		5k Thermistor	Hot water
2	26 25		5k Thermistor	Supply water

**Use of Maintenance Unit**

The controller can be checked and the operation adjusted using a JTL portable maintenance unit which plugs into the controller. Each item of information has an item number. The more important items are listed in the tables overleaf. Examples:

To read item 22 press: **ITEM** **2** **2** **ENTER**

To set item 40 to 100.0 press:

**ITEM** **4** **0** **ENTER** **SET** **1** **0** **0** **ENTER**

To correct errors press: **CANCEL**

To select next or previous items press: **+** and **-**

**Initial Commissioning and Bitswitch Settings**

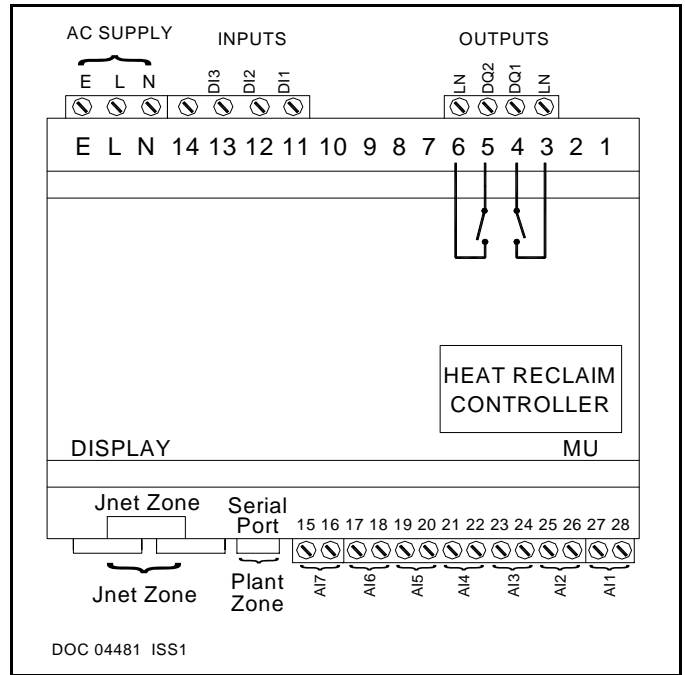
The controller has 1 set of data built in to its program for use during commissioning. Initialize to this data by setting item 9 to 1234. This loads into the controller a suitable set of data, adjustments should then be made as necessary.

**JTL Network Connection**

This unit can be configured onto the JTL as one or two units depending on the number of heat exchangers. The JTL unit numbers are set on items 101 & 201.

**Water Flow Monitoring**

The temperatures of the supply and hot water are monitored as is the water flow using a water meter with a pulse output. The unit calculates the heat gain of the hot water.



**Heat Exchange Monitoring**

The water is heated by up to two heat exchanges which heat water in associated tanks. When heat exchanger monitoring is in use this is provided by an interface module (IF54) which is connected to the FL210. Each heat exchanger requires its own IF54 module.

The temperatures of the gas on input and return gas are measured and the exit water flow and return temperatures are monitored.

**Water Pump Monitoring**

The water is pumped through the heat exchangers. The pumps can either be fixed speed (on/off) or variable speed. The pump speed and flow are available for display and heat calculation use.

**Heat Exchanger Heat Monitoring**

The heat gain of each heat exchanger is calculated using the pump flow and water flow and return temperature.

**Tank Temperature Monitoring**

The tank water temperature is also monitored by the associated IF54. The target temperature setpoint is available for display on the JTL network terminals.

**Display**

The FL210 controller drives the JTL LCD14 display using a CAB75 cable. Various cable lengths are available.

**Temperature units**

The temperature on the maintenance unit can be displayed in Celsius or Fahrenheit by setting item 178.

**Alarm Display**

Various alarms are indicated on the display. Typical messages displayed are:

- P.Flt Plant fault (highest priority)
- FAn Condenser fan failure (lowest priority)

The alarm conditions are flashed alternately with the heat delivered. In the event of there being more than one alarm the highest priority alarm is displayed.

**Daylight Saving**

When connected to a JTL network this controller can operate by displaying daylight saving time for its time. Daylight saving operation is selected by setting item 18. The connected network controller then adjusts the times automatically during the daylight saving period.

ADJUSTABLE PARAMETERS				FL210
	Item	Function	Range	Units
<b>FLOW SETTINGS</b>	40	Volume measured pulse	1 - 250	l
<b>WATER PUMP SETTINGS</b>	43 49 47 48	Water pump flow full speed Variable pump speed Voltage input @ full flow Voltage input @ zero flow	100 - 2500 0=Disabled 1=Enabled 5 - 10 0 - 5	l/n  v v
<b>SENSOR SELECTION</b>	51 52 131, 231 132, 232 133, 233 134, 234 136, 236	Hot water Supply water Refrigerant Gas 1 & 2 Refrigerant Gas Out 1 & 2 Water flow 1 & 2 Water return 1 & 2 Tank1 & 2	0=Disabled 1=Enabled 0=Disabled 1=Enabled 0=Disabled 1=Enabled 0=Disabled 1=Enabled 0=Disabled 1=Enabled 0=Disabled 1=Enabled 0=Disabled 1=Enabled	
<b>INTERFACE SETTING</b>	130, 230 909	Modbus device number Interface baud rate	1 - 247 0=600 baud, 1=1200 baud, 2=2400 baud, 3=4800 baud, 4=9600 baud, 5=19200 baud	
<b>DISPLAY</b>	178 189	Temperature units (MU) Backlight control	0 - Celsius 1 - Fahrenheit 0-off, 1-on, 2-off flashes alarm, 3 on flashes alarm	
<b>JNET FUNCTION</b>	101, 201 18	Unit numbers Daylight saving operation	0.1 - 899.7 0= standard time, 1 daylight saving time	

OTHER USEFUL ITEMS					
Item	Function	Item	Function	Item	Suction Valves
31	FLOW DATA Average flow rate over the last 15 mins	21	TEMPERATURES Hot water temperature	45	WATER HEATING Heat delivered to water (kW)
32	Average flow rate over the last hour	22	Supply water temperature	46	Average heat delivered to water (kW) over last 15 mins
33	Average flow rate over the last 24 hours	44	Hot water temperature difference	145, 245	Heat delivered by HT packs (kW) over the last 15 mins
34	Total flow over the last 24 hours	121, 221	Refrigerant Gas in temperatures	146, 246	Average heat delivered to water (kW) over last 15 mins
35	Flow in last minute	122, 222	Refrigerant Gas out temperatures	142, 242	Water pump flows
		123, 223	Water flow temperatures	143, 243	Average water pump flows (litres)
		124, 224	Water return temperatures	140, 240	Water pump speeds
		125, 225	Water temperature differences		
		126, 226	Tank temperatures		

**Relay Output Rating**

2A resistive

**Supply Requirements**

230 V ac 48-62 Hz Supply 6 VA maximum inputs  
2 mA maximum


24 Vac (optional)

**Applicable Documentation**

Item Numbers      Firmware Variations      Applications Diagram  
Doc No.04449      Doc No. 04450      Doc No. 04427

Installation Information  
Doc No.

**Note:** The information contained in this document applies to the current version of the unit supplied with it. Full operating manuals, item number and software variation information can be obtained from the supplier JTL Systems.

 This unit conforms with the relevant EU standards when fitted in accordance with its installation instructions.