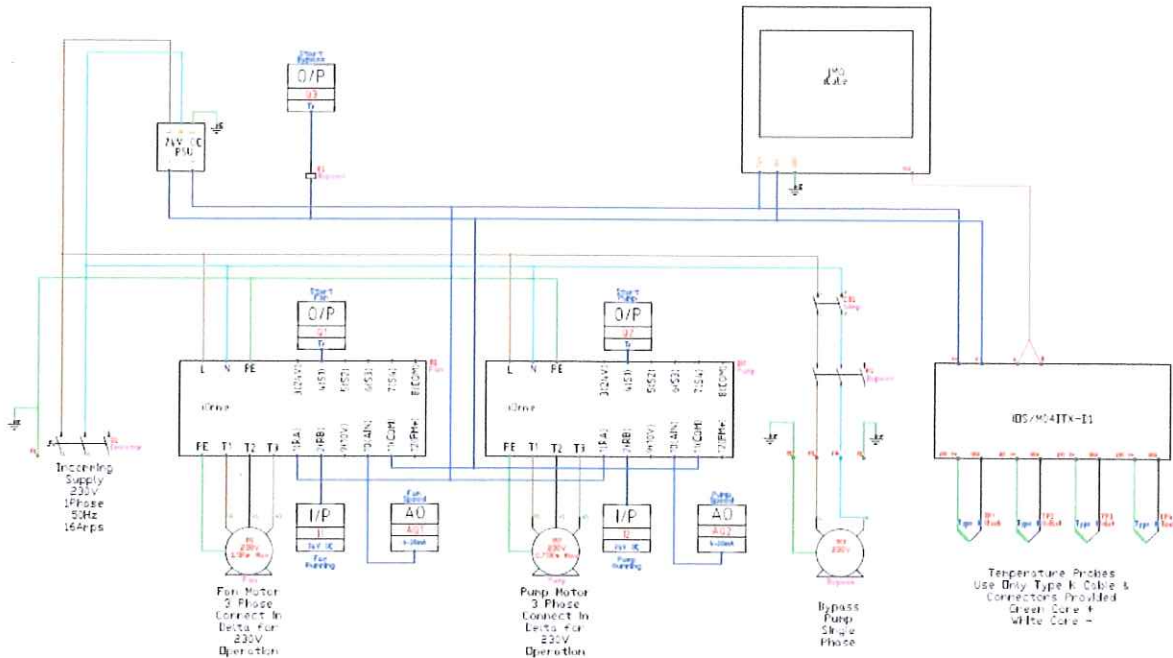


Dragon Biomass Boiler

Installation & Operating Instructions

Installation



Power Supply

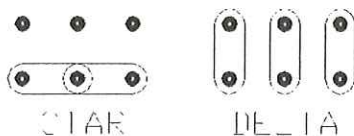
The panel requires a 16Amp Single Phase 50Hz Supply

This is connected directly to the bottom of the main Door interlocked isolator

It Recommended that Earth Leakage Devices are not used in this supply as they can be tripped by the filters which are integral to the inverters.

Fan

The fan must have a 3 Phase motor, no bigger than 1.5kw, it should be connected for 230V operation this would normally be a delta connection:

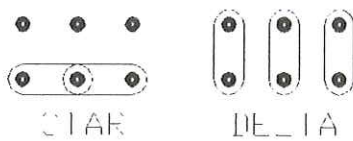


The fan should be connected using CY or SY 4 Core Cable

It is connected directly to the terminals on the bottom of the Left Hand, larger inverter (the one nearest the Isolator)

Circulation Pump

The pump must have a 3 Phase motor, no bigger than 0.75kw, it should be connected for 230V operation this would normally be a delta connection:



The fan should be connected using CY or SY 4 Core Cable

It is connected directly to the terminals on the bottom of the Right Hand, smaller inverter (the one furthest the Isolator)

Bypass Pump

The pump must have a 230V Single Phase motor, no bigger than 500w

The fan can be connected using PVC, CY or SY, 3 Core Cable

It is connected to the terminals P1L, P1N, PE, on the Right Hand side of the smaller inverter.

Temperature Probes

The system requires 3 probes to operate correctly, an additional 4th probe can be added to indicate the water temperature in the accumulator

If it is necessary to extend the cables to the probes, Type K Thermocouple Extension Cable must be used along with Type K Connectors, Green Core is +, White Core is -

Use of the wrong cable/connectors can lead to false/inaccurate temperature readings

A Length of extension cable & 4 connectors is supplied with the panel

Additional cable & connectors can be bought from: www.tcdirect.com

Part No's:

50m Roll of Cable	818-154
Male Plug	724-102
Female Socket	724-104

Stack Temperature

The Stack Temperature probe is a 300mm Long 4.5mm Diameter Type K Thermocouple, it comes with a ½" BSP Gland and 1meter of cable.

It should be mounted to measure the temperature within the flue

The probe is connected to the top 2 terminals (INO terminals - 1 & 2 of 8) on the bottom of the IOS/MO4ITX/DI temperature input module, which can be found in the lower right-hand corner of the panel

The green core goes to IN0/V+ the white core goes to IN0/GNA

Outlet Water Temperature

The outlet water Temperature probe is a 100mm Long 3mm Diameter Type K Thermocouple, it comes with a ½" BSP Gland and 1meter of cable.

It should be mounted in the hot water outlet pipe where it leaves the boiler (it must be between the boiler outlet & the Tee which feeds the bypass pump) to measure the temperature of the water leaving the boiler

The probe is connected to the 3rd & 4th terminals (IN1 terminals - 3 & 4 of 8) on the bottom of the IOS/M04ITX/DI temperature input module, which can be found in the lower right-hand corner of the panel

The green core goes to IN1/V+ the white core goes to IN1/GNA

Return Water Temperature

The return water Temperature probe is a 100mm Long 3mm Diameter Type K Thermocouple, it comes with a ½" BSP Gland and 1meter of cable.

It should be mounted in the hot water return pipe where it returns to the boiler (it must be between the boiler inlet & the Tee from the bypass pump) to measure the temperature of the water returning the boiler

The probe is connected to the 5th & 6th terminals (IN2 terminals - 5 & 6 of 8) on the bottom of the IOS/M04ITX/DI temperature input module, which can be found in the lower right-hand corner of the panel

The green core goes to IN2/V+ the white core goes to IN2/GNA

Accumulator Water Temperature

This is an optional Item, the system will operate without it.

The optional accumulator water Temperature probe is a 100mm Long 3mm Diameter Type K Thermocouple, it comes with a ½" BSP Gland and 1meter of cable.

It should be mounted in the accumulator to measure the temperature of the water stored

If connected the temperature will be displayed (if not connected the display is automatically hided)

The probe is connected to the 7th & 8th terminals (IN3 terminals - 7 & 8 of 8) on the bottom of the IOS/M04ITX/DI temperature input module, which can be found in the lower right-hand corner of the panel

The green core goes to IN3/V+ the white core goes to IN3/GNA

Commissioning

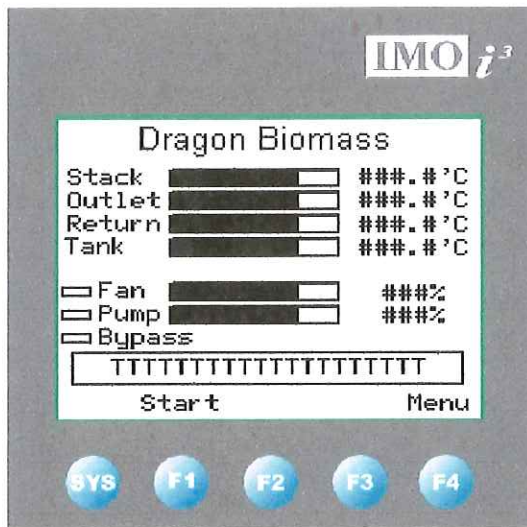
Power Up

Check all wiring is correct & all terminals tight & secure

Measure Voltage on bottom of isolator, It should be 230V

Turn on Isolator, wait & check for the following:

1. Green LED on DC Power Supply
2. Displays lit on both inverters
3. Screen on Door will go through some self-checks & then display:



Temperature Probes

Disconnect each probe in turn to check it is connected to the appropriate display

Once re-connected check the temperature displays are appropriate to the current ambient temperature

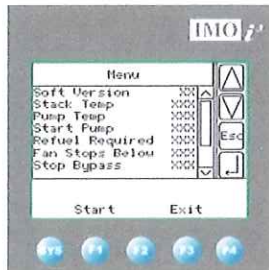
(Note the tank temperature display disappears when the probe is unplugged)

Button "F4" on the controller
menu will appear:

Fan

Press the Menu

The following



Use the Arrow Keys

on the touchscreen to Scroll Down to the bottom of the menu:



Highlight "Fan Test" and press enter



The following screen will appear:



Using the sliding control set the speed to about 10% Press "Start Fan" on the touchscreen,
Screen will Change to:



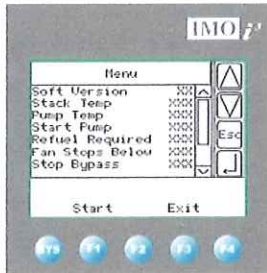
Button "F4" on the controller
menu will appear:

Check Fan is Rotating in the correct direction (Stop & Start Fan using Touchscreen if required)
Use Slider to set Speed to 100%, Check Fan Runs up to Full Speed (Takes approx. 1 minute)
Press "Stop Fan" then Press the Exit Key "F3"

Pump

Press the Menu

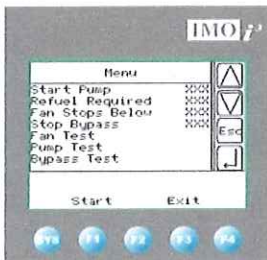
The following



Use the Arrow Keys



on the touchscreen to Scroll Down to the bottom of the menu:



Highlight "Pump Test" and press enter



The following screen will appear:



Using the sliding control set the speed to about 10% Press "Start Pump" on the touchscreen,
Screen will Change to:

Button "F4" on the controller
menu will appear:

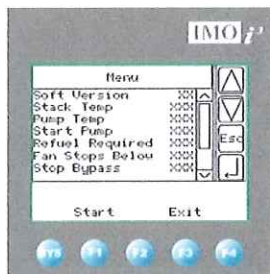


Check Pump is Rotating in the correct direction (Stop & Start Pump using Touchscreen if required)
Use Slider to set Speed to 100%, Check Pump Runs up to Full Speed (Takes approx. 15 Seconds)
Press "Stop Pump" then Press the Exit Key "F3"

Bypass Pump

Press the Menu

The following



Use the Arrow Keys

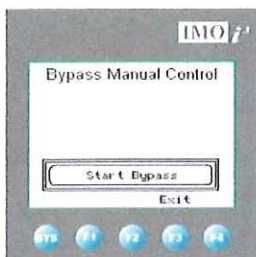
on the touchscreen to Scroll Down to the bottom of the menu:



Highlight "Bypass Test" and press enter



The following screen will appear:



Button "F4" on the controller
menu will appear:

Press "Start Bypass" on the touchscreen, Screen will Change to:



Check Bypass Pump is Rotating (Stop & Start Pump using Touchscreen if required)

Press "Stop Bypass" then Press the Exit Key "F3"

Start Up & Operation

Before Lighting Boiler, Water System Must Be Filled & Checked.

Place material to be burnt in boiler, Start Fire, Close door

On Controller press the Start Key "F1"

The Fan & Bypass Pump will start

The Fan will gradually speed up to feed the fire, as the flue temperature approaches the set temperature the fan will slow down & then regulate its speed automatically to maintain the required flue temperature

As the water in the boiler heats up, the Pump will start automatically and adjust its speed to maintain the required water temperature

When the pump speed exceeds a set level, the bypass pump will stop, re-starting if the pump speed drops.

The system will self-regulate until the boiler requires more fuel, if fuel is not added the system will sequentially shut down as the temperature drops.

To Shut Down the system press the stop button "F2" The Fan will stop, The pump will run on until the water temperature drops

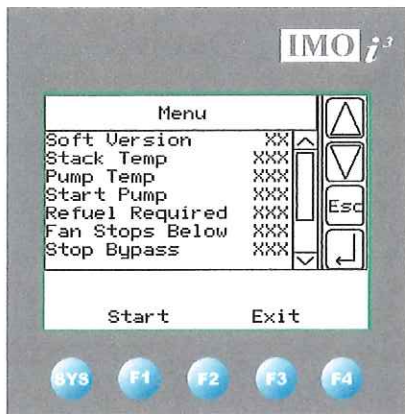
Adjusting Settings

The controller is preset with typical settings for:

- Stack Temperature
- Water Temperature
- Water Temperature required before pump starts
- Flue Temperature when Re-Fuel is Required
- Flue Temperature when fan stops, if boiler is left to burn out.

- Pump Speed to be reached before the bypass pump stops.

These can be adjusted from the menu screen:



Use the Arrow Keys on the touchscreen to highlight the setting to be changed

A key pad will appear on the touchscreen

Type in the value required & press enter

To return to the main screen press Exit "F3"