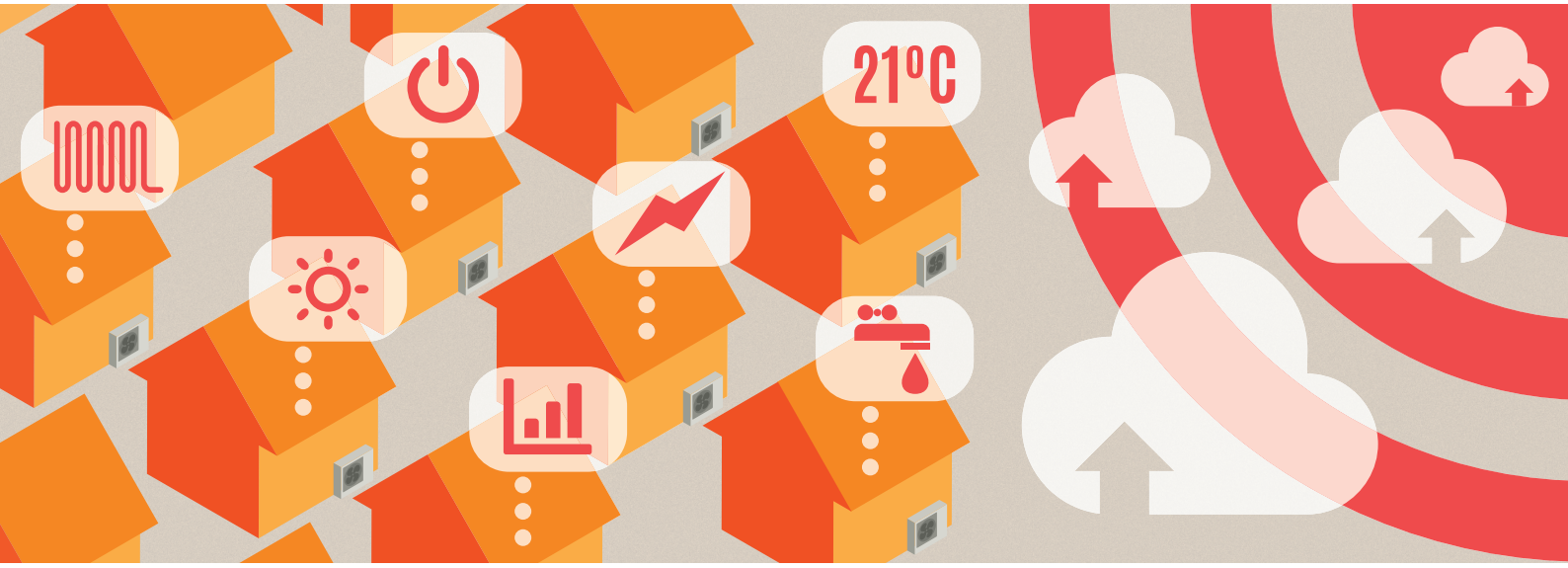
The Renewable Solutions Provider
Making a World of Difference

Ecodan MMSP* Application Guide



*Metering and Monitoring Service Package

MITSUBISHI ELECTRIC

Air Conditioning | Heating
Ventilation | Controls

ecodan®
Renewable Heating Technology

Contents

1

An Overview of the MMSP Scheme

The Renewable Heat Incentive (RHI) has helped promote the growth of low carbon heating since its introduction in 2011 and the Government has continued to look for ways to enhance the Scheme.

To further enhance the Renewable Heat Incentive (RHI) scheme, the UK Government currently offers householders installing a heat pump an additional £1610 when purchasing and installing a Metering and Monitoring Service Package (MMSP). An initial lump sum payment of £805 (50%) is provided alongside the first quarterly RHI payment. The outstanding balance, equating to £115pa, is subsequently divided equally across the householder's accredited Domestic-RHI term (7 years) and paid on a quarterly basis.

The service package report from Mitsubishi Electric's MMSP will enable the householder to obtain the operational data needed to claim the additional payment each year and help them to ensure that the installation is satisfactorily functioning as expected. MMSP also enables an installer to continually improve performance where possible and aid in the diagnosis of problems should the need arise.

The Scheme is administered by OFGEM which has outlined extensive and detailed methodology on how the heat pump system should be monitored. This places a high level of importance on accuracy and the clear presentation of the data collected.

A requirement of the Scheme is that the heat pump owner must purchase the MMSP directly from the installer. You and your customer then enter into an agreement that you are responsible for the provision of the monitored data. This agreement also states that both parties should have full access to the data and that the monitoring package complies with the criteria set out by OFGEM.

The MMSP package from Mitsubishi Electric enables you to supply a solution to your customers that provides easy access to this extra funding. It also allows you to meet the detailed requirements set out by OFGEM covering both the appropriate monitoring hardware and how the data is recorded and displayed.

*

A Wi-Fi connection is required at the property for MMSP.

Monitored system data cannot be captured without a Wi-Fi connection.

Monitoring Equipment Hardware - Heat Meter

A Measuring Instruments Directive (MID) compliant heat meter must be installed into the system's primary pipework to measure the heat energy output from the Ecodan unit.

IMPORTANT - Mitsubishi Electric is supplying two types of heat meter for MMSP.*

Please check that you have purchased the correct energy monitoring pack for your particular system.

Model:	Sontex SuperStatic 440

Model:	Sontex Supercal 531 integrator unit

The total cumulative heat energy output of the system is displayed on the Supercal 531 integrator unit. The display is connected to the main body of the flow meter by a 1m cable.The display unit should be mounted remotely in an appropriate position to be visible to the customer.

Measurement type:	Fluid Oscillation
Connection:	¾” male
Dimensions:	l 110mm, w 125mm, h 79mm
Weight:	2.5kg
Power supply:	Battery
Output signal:	1 pulse per Wh
Thermistors:	2m PT500, flow and return
Supplied loose:	2 no. t-piece 28mm x 28mm x ½” female; 2 no. ½” thermistor pockets male

* Meters are calibrated for use with either monobloc (25% glycol) or split type ecodan (0% glycol). With Monobloc installations, ensure that the glycol content of the water correctly correlates with the calibration of the meter (25% glycol content) to ensure accurate energy usage readings are collected.

2

Hydraulic Installation Details - Heat Meter

The installation should be made “meter ready” as much as possible before the MMSP is installed. Space must be left to install the heat meter and its ancillary components. Isolation valves should be installed around the heat meter. A suitable location allowing access should also be considered.

The flow meter and return temperature sensor t-piece of the heat meter take up the most space and need to be situated on the return pipework between the circulation pump and the distribution system of the primary circuit.

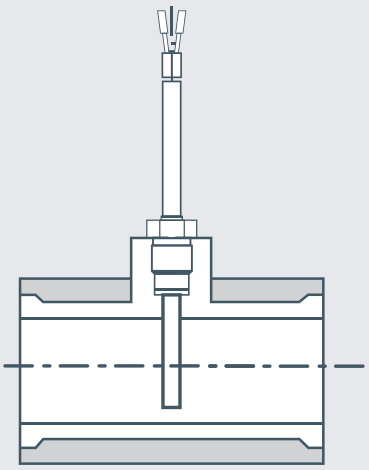
Take care to install the meter in the correct direction of water flow. The arrow on the body of the unit should be in line with the water flow direction.

The heat meter flow temperature sensor should be no more than 2m from the flow meter.

The flow and return temperature sensors should be installed into the pockets provided. These pockets must be screwed into the supplied t-pieces.

The temperature sensors must be mounted symmetrically in flow and return pipework. Flow and return sensors must be mounted to the bottom of the pockets.

The temperature sensor cables should NOT be extended.



Sensor Pocket

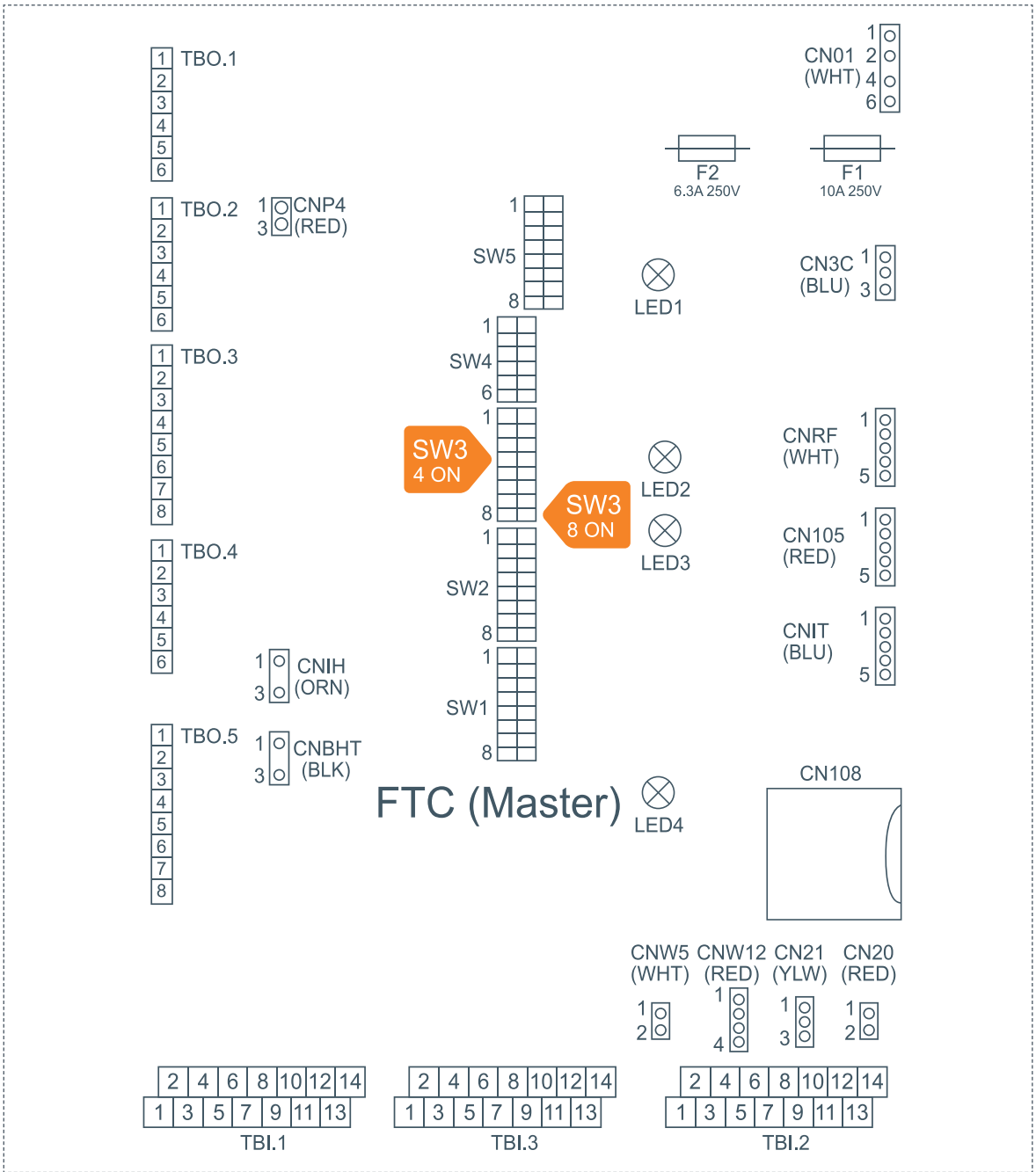
Sontex SuperStatic 440

Further Information Please refer to the hydraulic schematic and installation manual of the heat meter

Electrical Installation Details - Heat Meter

The FTC control board must be configured correctly before connection to any meters. The system must be powered down and the followings dip switches must be set:

SW3-4 ON:	Enable **Electric** Meter
SW3-8 ON:	Enable **Heat** Meter



Electrical Installation Details - Heat Meter

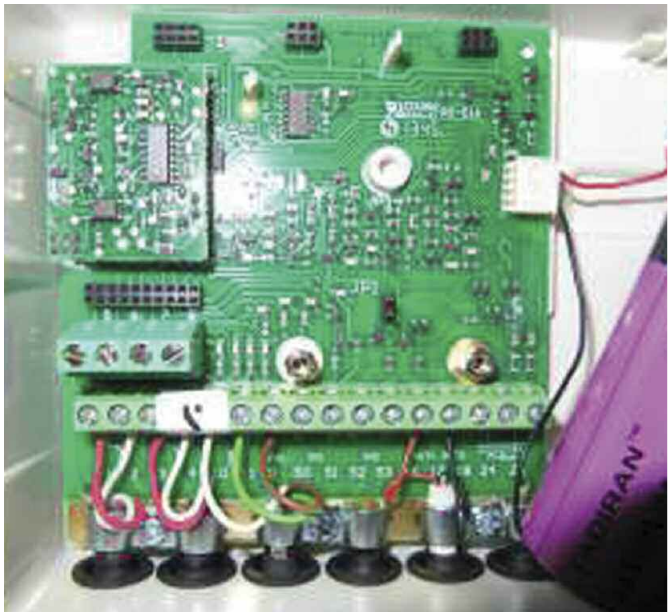
The Supercal 531 module has 2 pulsed outputs. Output 1 is the energy output and is connected to input 10 on the FTC board.

Please note that this module will emit 1 pulse per Wh of heat energy produced.

A 2-core cable is required for connection between the Supercal 531 and the FTC board.

Heat Meter Board	FTC Board, IN10
16 (+)	TBI.3 pin 5 (+)
17 (-)	TBI.3 pin 6 (-)

Continuity is essential. Crossed terminals will result in the meter not outputting pulses.

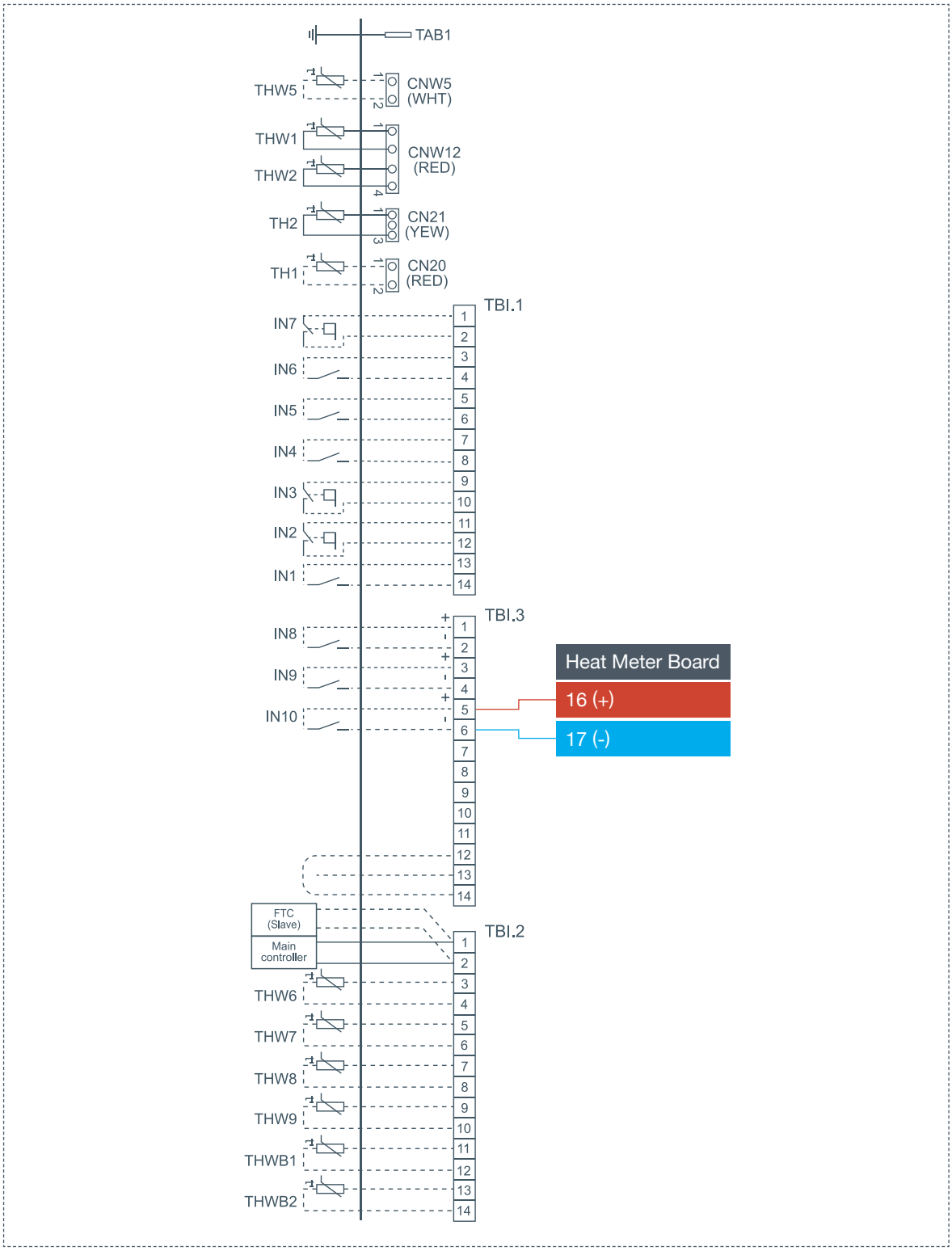


The heat meter is battery powered and therefore does not require a power supply. It is unlikely that the battery will need to be changed during the whole monitoring period.

2

Electrical Installation Details - Heat Meter

FTC Board



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Monitoring Equipment Hardware - Electricity Meter

In order to accurately calculate how efficiently the complete heating and hot water system is performing, the electrical consumption of all the components of the system must be measured.

To measure the electricity used, Mitsubishi Electric is supplying two electrical energy meters as part of the MMSP offering.

- There are two inputs on the control board for electrical pulse measurement
- One meter should be connected to the outdoor unit and the other to the immersion heater and FTC supply

Electric Energy Meter, Elster A100C

The total cumulative electrical energy consumed by the connected device is displayed on the Elster A100C meter. The meter should be mounted remotely in an appropriate position to be visible to the customer.

Dimensions:	w 130mm, d 47mm, h 97mm
Weight:	345g
Power supply:	From appliance
Output signal:	1 pulse per Wh
Qty.	2

3

Electrical Installation Details - Electricity Meter

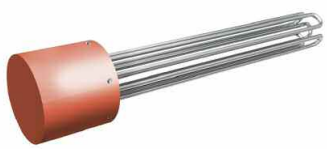
The FTC control board must be configured correctly before connection to any meters. Please refer to the previous section describing dip switch settings.

In most Ecodan system installations there will be 3 individual electrical power supplies for the following components:

1. Ecodan

2. FTC

3. Cylinder Immersion Heater



In order for the MMSP to be compliant, the electrical consumption of these 3 components must be measured using the 2 electrical meters supplied. Each component will require its own circuit breaker therefore:

MODIFICATIONS TO THE MCBs IN THE CONSUMER UNIT WILL / MAY NEED TO BE MADE!

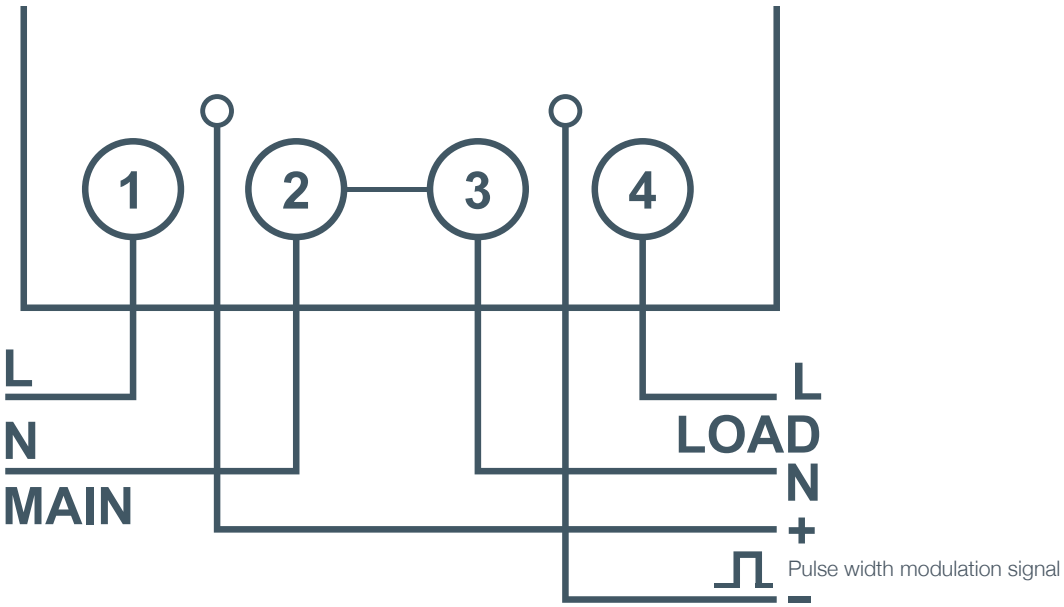
One electrical energy meter should be installed to measure the consumption of both the cylinder immersion heater and the FTC indoor unit. The second meter should be installed to measure the electrical consumption solely for the Ecodan unit. Please refer to the electrical wiring diagram “MMSP Electrical Meters_01” showing the position of the meters.

An example of how this can be achieved is by installing a separate distribution panel containing the MCBs for the Ecodan system. **It is up to the installer to ensure the requirements of “MMSP Electrical Meters_01” are met using the appropriate installation method for the site in question, and using best practices at all times.**

Electrical Installation Details - Electricity Meter

The Elster A100C meter has a pulsed output giving 1 pulse per Wh of electrical energy consumed by the appliance. The pulse output terminals must be connected to the FTC board using a 2 core cable.

Elster A100C terminal diagram



Pulsed Output

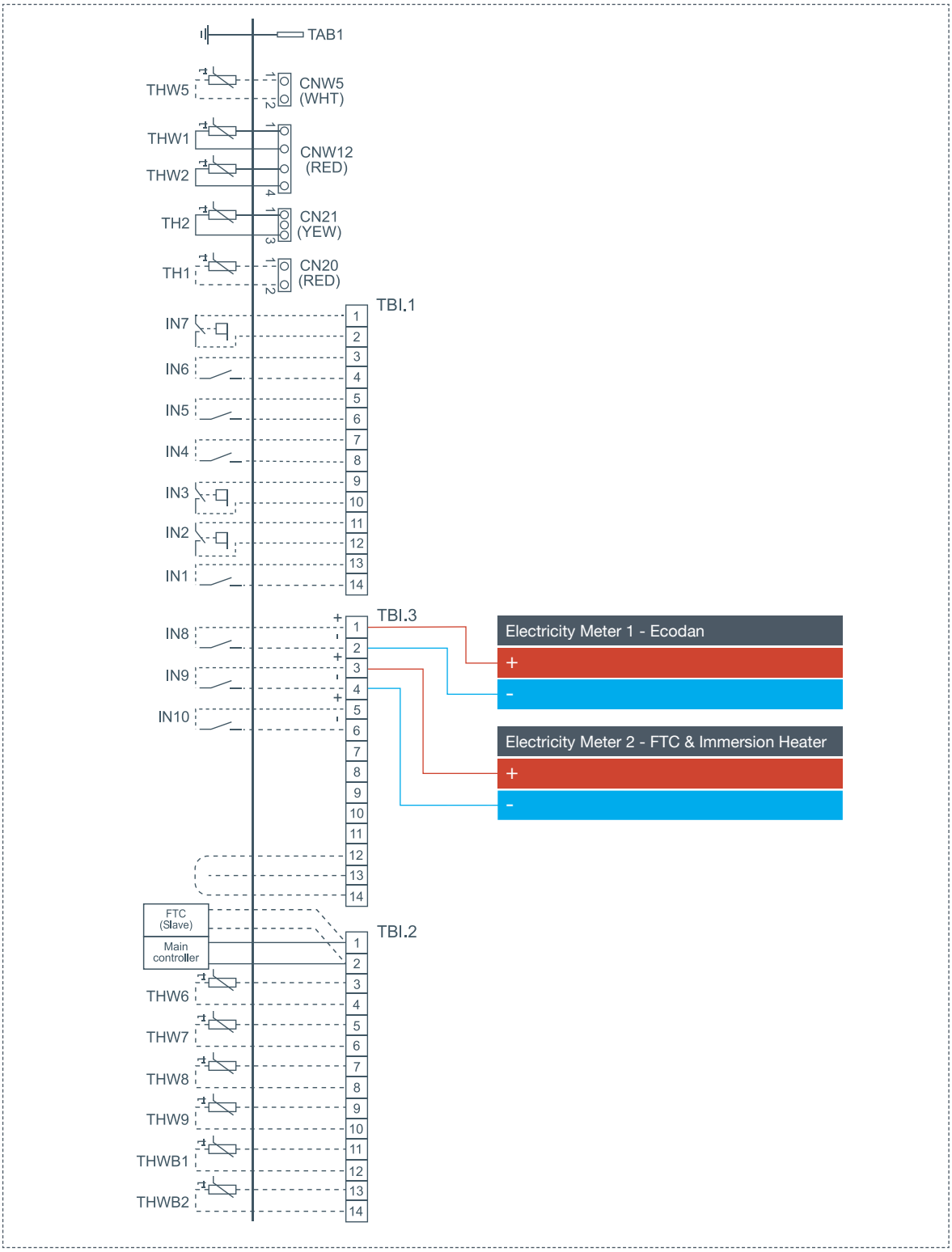
Electricity Meter 1 - Ecodan	FTC Board – IN8
+	TBI.3 pin 1 (+)
-	TBI.3 pin 2 (-)
Electricity Meter 2 - FTC & Immersion Heater	**FTC Board – IN9**
+	TBI.3 pin 3 (+)
-	TBI.3 pin 4 (-)

Continuity is essential. Crossed terminals will result in the meter not outputting pulses.

3

Electrical Installation Details - Electricity Meter

FTC Board



4

Monitoring Equipment Hardware - Ecodan Wi-Fi Adaptor

The recorded data from all installed meters is captured by the FTC control board. The Ecodan Wi-Fi adaptor must be installed so that the data is saved to the server and can be viewed later.

IMPORTANT - if the Wi-Fi adaptor is not communicating with the local Wi-Fi network, monitored data will not be recorded.

Model:	PAC-WF010-E

The Wi-Fi adaptor is plugged into CN105 on the FTC control board. It should be located where it can pick up the local Wi-Fi signal.

Weight:	116g

The adaptor is paired to the local Wi-Fi network router using the WPS method. It must be paired twice to ensure it is communicating correctly. Please refer to the PAC-WF010-E installation manual and the MELCloud user manual for more information on installation of the Wi-Fi adaptor.

If you experience ongoing communication issues with the PAC-WF010-E you may need to update the firmware on the device. **Please refer to the document "Firmware Update for PAC-WF010-E"**.

These documents can be downloaded via our Document Library: **library.mitsubishielectric.co.uk**

5

Monitoring Equipment Software - Ecodan Main Controller

The correct pulse rate for the installed meters must be set up through the Ecodan Main Controller.

This can be found in the **"Service"** menu under **"Energy monitor settings"**. Navigate to **"Electric energy meter"** and set 1000 pulses per kWh. Navigate to **"Heat meter"** and set 1000 pulses per kWh. Confirm your settings and exit the **"Service"** menu.

Monitoring Equipment Software - MELCloud

The software platform for recording and viewing MMSP data is MELCloud. This is an App based solution for controlling and monitoring Ecodan heating systems remotely by Smartphone, Tablet and PC.

MELCloud users will be able to monitor and control their Ecodan system via local Wi-Fi or the Internet. The MELCloud App can be downloaded in the conventional way from the App Store, Google Play for Android or Windows Store.

MELCloud has been further enhanced to adhere to OFGEM's requirements for a Metering and Monitoring package. The enhanced functionality allows customers to select any date range up to the last 12 months and see a detailed bespoke energy report for their heating and hot water system.

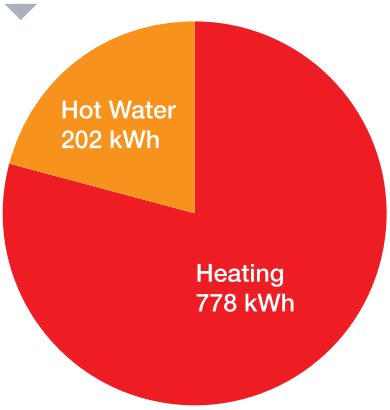
MELCloud™

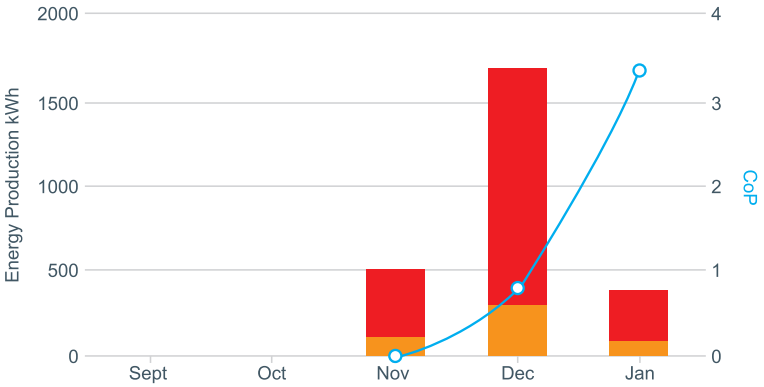
6 Monitoring Equipment Software - MELCloud

The reports are generated within the MELCloud App environment and can be exported to PDF.

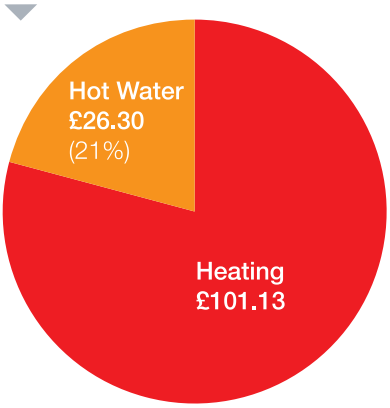
Sample MMSP report:

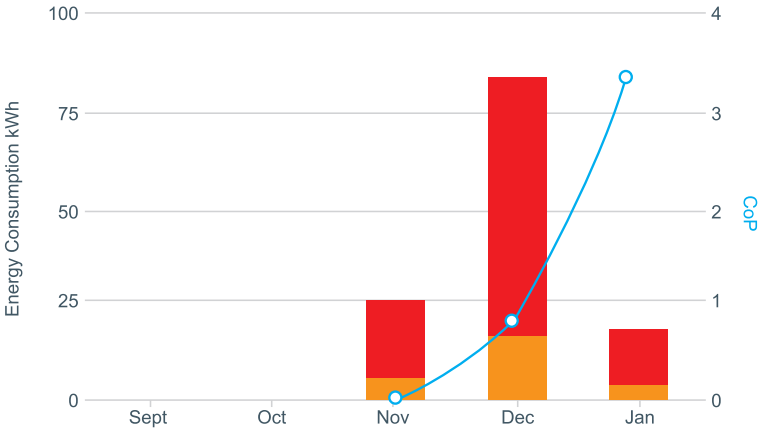
Energy Consumption





Run Costs





Your total Ecodan systems running cost for this period was **£127.43**

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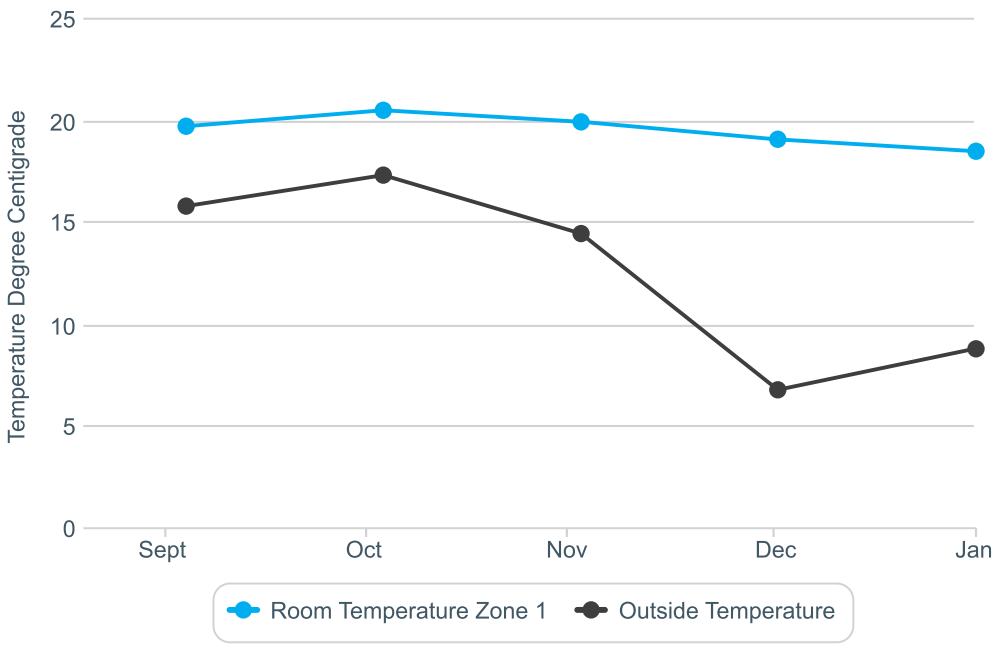
Monitoring Equipment Software - MELCloud

Temperature History



A detailed CSV file (spreadsheet) can also be exported.

The CSV file has minute by minute resolution of all the system data below, and may be required by OFGEM:

- Heat energy produced by heat pump (Wh)
- System water flow temperature (ºC)
- Electrical energy consumed by heat pump (Wh)
- Electrical energy consumed by ancillary components e.g. immersion heater (Wh)
- Indoor temperature (ºC)
- Outdoor temperature (ºC)
- Heating or hot water mode

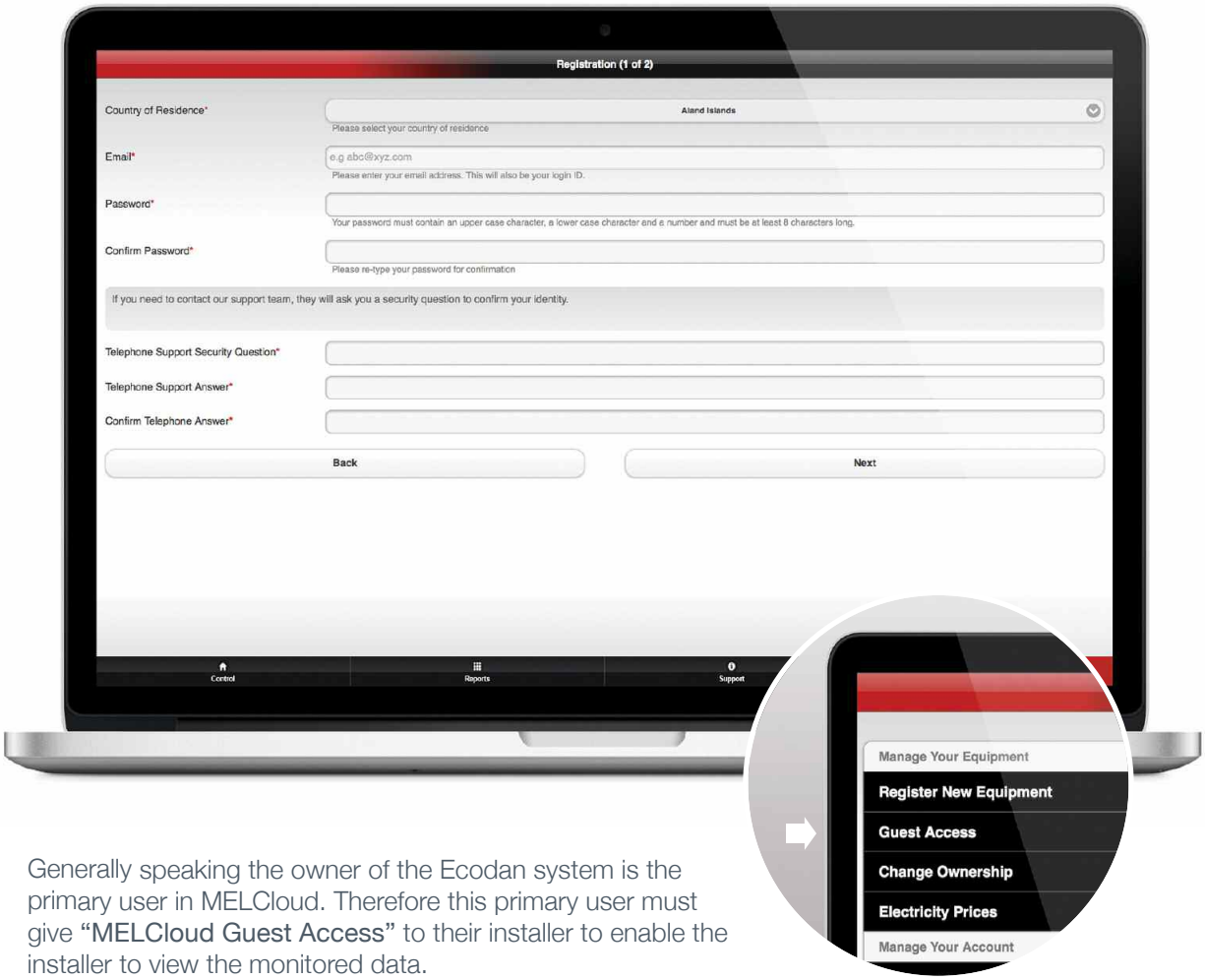
Data should be downloaded and saved periodically to ensure monitored data is not lost.
This data can then be submitted to OFGEM as required.

MELCloud™

6 Monitoring Equipment Software - MELCloud

Please note that the MMSP functionality has been designed to be used through the PC web based version. All other MELCloud functionality can be accessed through the App as well as the web client. Other Apps may need to be downloaded to your mobile device in order to fully utilise the MMSP functionality.

The installer and customer **MUST BOTH** have MELCloud accounts in order to comply with MMSP criteria. If either party does not have a MELCloud account, please visit **www.melcloud.com**. From the homepage select **"Login"** and then select **"Register Account"**. Follow the instructions to complete the MELCloud registration. Should you require more assistance please refer to the MELCloud User Manual. This manual also contains a **"Frequently Asked Questions"** section.



Generally speaking the owner of the Ecodan system is the primary user in MELCloud. Therefore this primary user must give **"MELCloud Guest Access"** to their installer to enable the installer to view the monitored data.

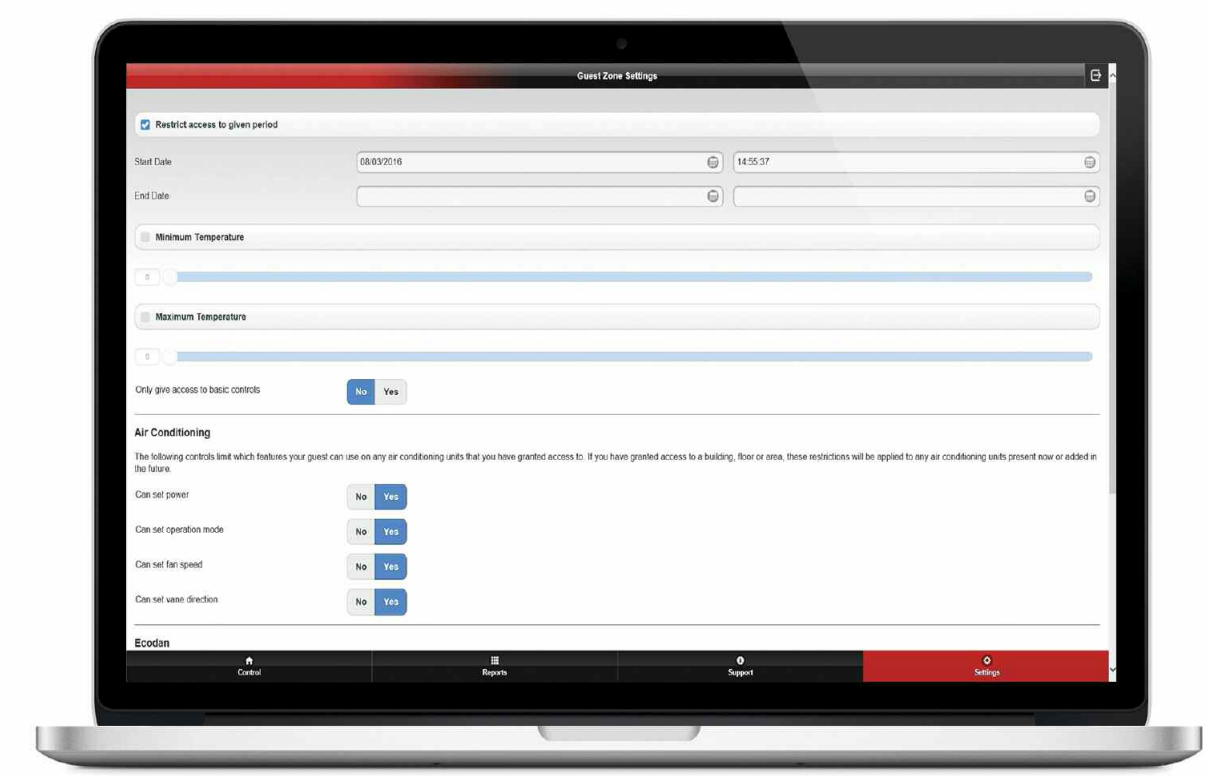
The Wi-Fi adaptor must be communicating correctly with the server to complete the registration process. Please refer to the section on page 13 regarding the installation of the Ecodan Wi-Fi adaptor.

MELCloud™

6 Monitoring Equipment Software - MELCloud

The primary user has the ability to restrict the parameters of guest access if they wish.

Guest access period	Limit the time period the guest is allowed access to the system
Temperature range	Limit the allowable room set point temperature
Advanced control	Hide the advanced control menu from the guest



Guest access must be given to the installer in order to comply with the requirements of MMSP.

The MMSP function of MELCloud must be activated by Mitsubishi Electric. You must email **mmsp@meuk.mee.com** with the following details:

- MAC address and serial number of Wi-Fi adaptor - this can be found on the device
- Order reference number that was used to purchase MMSP
- Date that you want the MMSP to be activated from
- Electrical energy consumed by ancillary components e.g. immersion heater

Once Mitsubishi Electric is satisfied that the above criteria have been met, MMSP will be activated. Mitsubishi Electric will email the installer to confirm activation.
The installer must check the function is working in MELCloud.

MELCloud™

7

MMSP Agreement

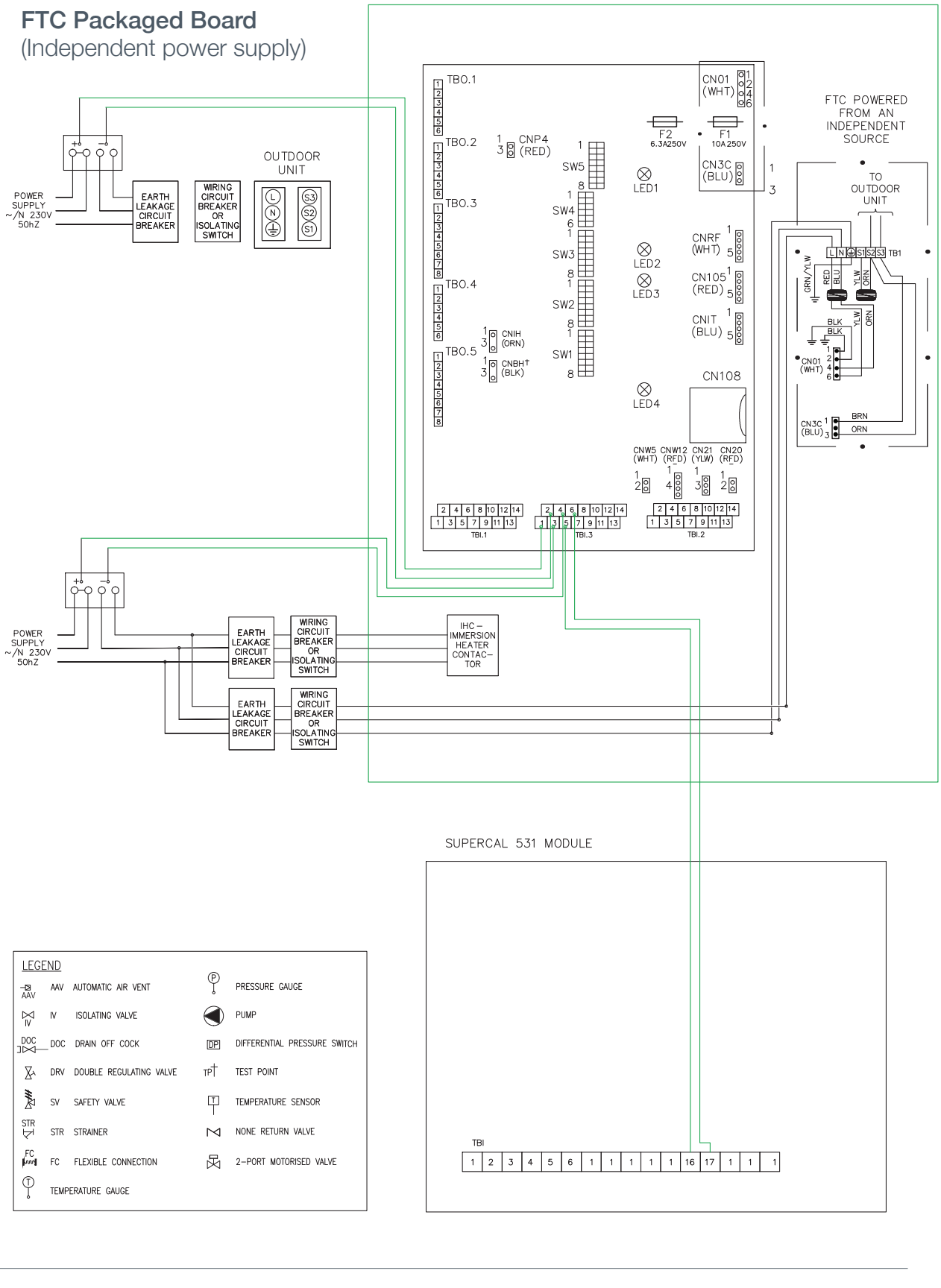
Mitsubishi Electric will endeavour to assist the installer as much as practically possible with MMSP but ultimately it is the installer's responsibility to deliver and support this offering.

The MMSP is considered as a service contract between the installer and the customer. A model MMSP agreement is available from the OFGEM website. This should be reviewed carefully by the installer and the customer and signed by both parties. The model agreement states that the installer must provide an itemised schedule of equipment and a checklist of how the equipment complies with the requirements of MMSP. Mitsubishi Electric has provided this as a separate document that can be included in your MMSP offering to the customer.

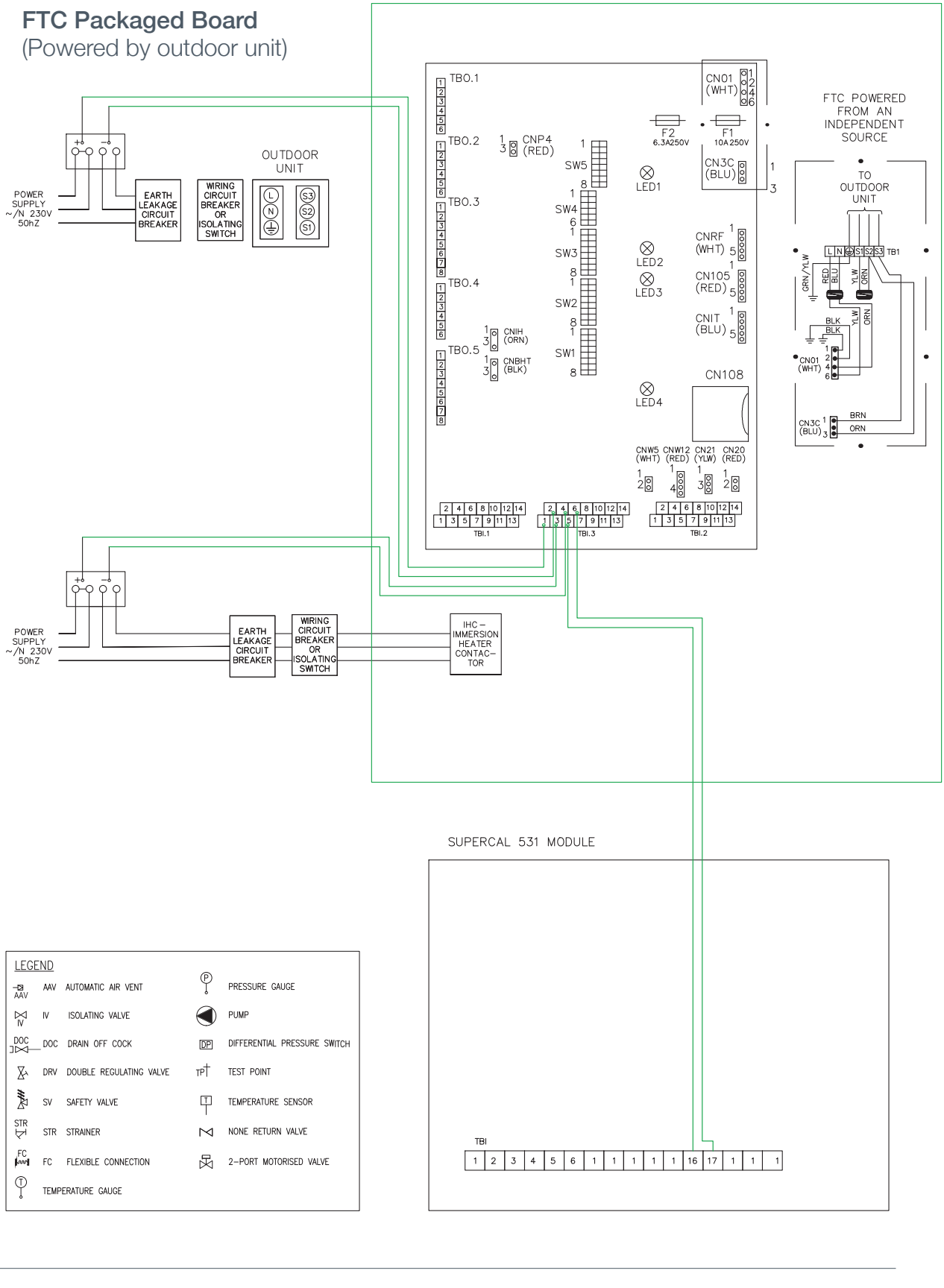
Please visit the OFGEM MMSP website for more information: **www.ofgem.gov.uk**

Schematics - MMSP Electricity Meters

FTC Packaged Board
(Independent power supply)



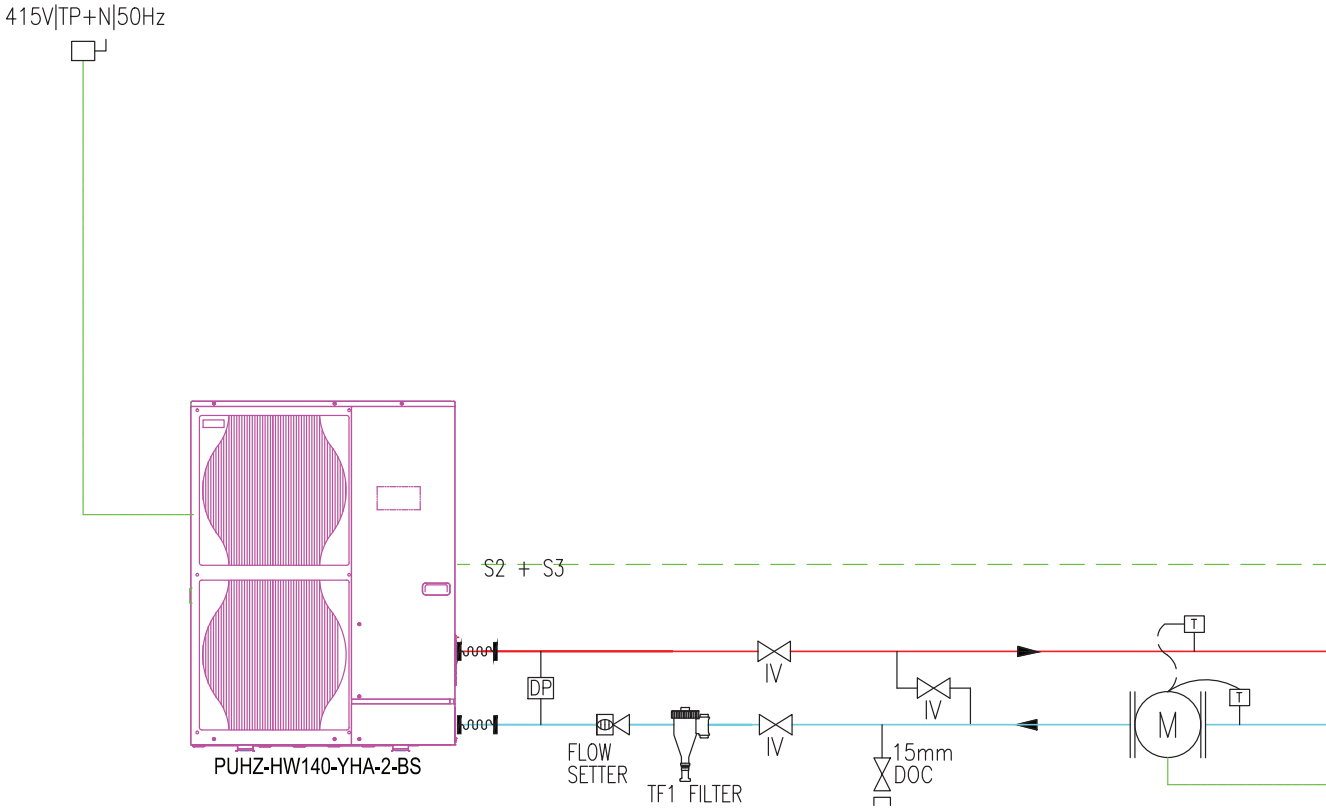
FTC Packaged Board
(Powered by outdoor unit)



LEGEND

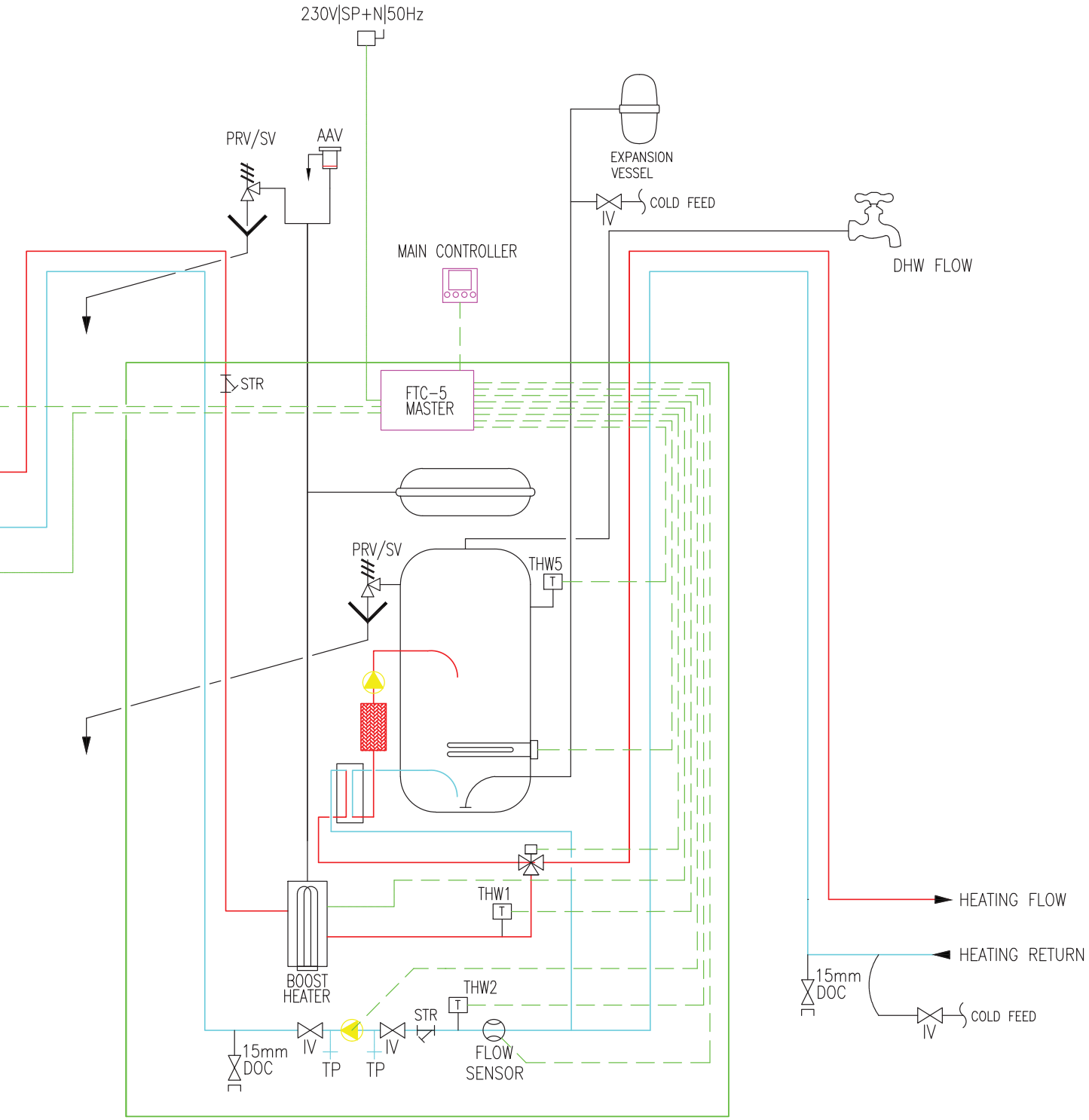
AAV	AAV AUTOMATIC AIR VENT	P	PRESSURE GAUGE
IV	IV ISOLATING VALVE		PUMP
DOC	DOC DRAIN OFF COCK	DP	DIFFERENTIAL PRESSURE SWITCH
	DRV DOUBLE REGULATING VALVE	TP	TEST POINT
	SV SAFETY VALVE	T	TEMPERATURE SENSOR
STR	STR STRAINER		NONE RETURN VALVE
FC	FC FLEXIBLE CONNECTION		2–PORT MOTORISED VALVE
T	TEMPERATURE GAUGE		

Schematics - MMSP Heat Meter Arrangement



LEGEND

AAV	AUTOMATIC AIR VENT	P	PRESSURE GAUGE
IV	ISOLATING VALVE		PUMP
DOC	DRAIN OFF COCK	DP	DIFFERENTIAL PRESSURE SWITCH
DRV	DOUBLE REGULATING VALVE	TP	TEST POINT
SV	SAFETY VALVE	T	TEMPERATURE SENSOR
STR	STRAINER		NONE RETURN VALVE
FC	FLEXIBLE CONNECTION		2-PORT MOTORISED VALVE
T	TEMPERATURE GAUGE		


230V|SP+N|50Hz
PRV/SV
AAV
EXPANSION VESSEL
IV
COLD FEED
DHW FLOW
MAIN CONTROLLER
STR
FTC-5 MASTER
PRV/SV
THW5
T
THW1
T
HEATING FLOW
HEATING RETURN
BOOST HEATER
THW2
T
STR
15mm DOC
IV
TP
TP
IV
FLOW SENSOR
15mm DOC
IV
COLD FEED

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