

General Description & Notes

The current owner is an Octogenarian technician, who with his wife have been the occupants of this property for 34 years and had no requirement for seven bedrooms and so two of the 1st floor rooms were used for electronics development and storage with an appropriate allowance for guest accommodation in other areas of the building.

240 Volt Mains Installation

In 2021 the distribution system was upgraded to 18th Edition IEE Regulations. Previous distribution boards were removed and replaced by 18th Edition metal clad units with state-of-the-art circuit controls. Outbuildings were also subjected to the same standards. e.g. Freezer circuits supplied by RCBO breakers to ensure maximum individual protection for their respective circuits.



The fuse board legends are displayed upon each board respectively and also in a combined A4 printed graphic, as per the example displayed below. A copy is kept close to this installation and it provides detailed advice upon all functions.

The 20 amp switch displayed above and again right (RED pilot light) over-rides the immersion heater time switch when ON and permits manual control of the units.

Board No. 1 is equipped with surge protection to prevent high voltage spikes causing damage, especially to electronic apparatus.



La Casa - Metal Clad Fuse Boards
3 Units in the main residence + 1 in the garage, also with RCD protection
See photographs for visual details

18th Edition Regulation Consumer Units
VERSION 2 – Printed: 8th October 2021

Consumer Unit Construction				Contactum Consumer Unit 1 – Left Hand Side			
Ways	Unit	Circuit	Rating Amps	Count	FUSE TYPE	Count	AMPERAGES
1	Surge	Remainder	100	0	RCBO	3	6
2	Isolator N	Remainder	100	11	MCB	1	10
3	Isolator L	Surge	10	2	RCD	2	16
4	MCB	Remainder - Right Hand Side	100	1	SURGE	0	20
5	RCD			0	BLANK	4	32
6						1	40
7	MCB	Cooker Kitchen	40				
8	MCB	Shower Flat	32				
9	MCB	SPARE	32				
10	MCB	SPARE	16				
11	MCB	Lighting Bedrooms	6			11	MIXED
12	RCD	Remainder	100				
13							
14	MCB	Ring Main – Flat 1	32				
15	MCB	Ring Main – Flat 2	32				
16	MCB	Radial 13A – Computer	16				
17	MCB	Lighting – Flat	6				
18	MCB	Lighting Living Area	6				
				NOTE The colours in the RATING AMPS column represent the colours of the breaker switch tabs			
1	Isolator N	Remainder - Right Hand Side	100	Contactum Consumer Unit 2 – Centre			
2	Isolator L			Count	FUSE TYPE	Count	AMPERAGES
3	RCBO	SPARE	32	7	RCBO	0	6
4	RCBO	Ring Main – Beds	32	0	MCB	0	10
5	RCBO	Ring Main – Living	16	0	RCD	3	16
6	BLANK	VACANT	0	0	SURGE	1	20
7	RCBO	Kitchen Radial - DW/WASTE	32	1	BLANK	3	32
8	RCBO	Freezer – Kitchen	20			0	40
9	RCBO	Freezer – Utility	16				
10	RCBO	Immersion Heater	16				
11	TIME						
12	SWITCH	Immersion Heater	N/A			7	MIXED
1		Remainder - Left Hand Side	63	Axium Consumer Unit 3 – Right Hand Side			
2	RCD			Count	FUSE TYPE	Count	AMPERAGES
3	MCB	Garage	32	0	RCBO	1	6
4	MCB	Cooker Flat	16	3	MCB	1	16
5	MCB	SPARE	6				

ENERGY CONSERVATION

Aspects of the electronics were mainly dedicated to domestic advances (Thermal Hot Water Tubes, Low Voltage (12V and 24V) attributes and low voltage Solar Voltaic applications) mainly in respect of this property. All developments are duly documented with working Simulator files.

Details of such are set out below:

a) HEATING & DUAL HOT WATER

Conventional CH and Water heating is by an oil fired boiler, which heats domestic radiators and a large conventional gravity fed hot water storage tank, which is normally fed from the domestic cold water supply, but not in this case, a statement that will be qualified below.

Heating has dual zone CH pumps (Living area & Bedroom area circuits), which can be controlled individually by respective dual zone thermostats. This control system is operated upon a low voltage Solar supply. Two conventional wall radiators in the lounge/dining area have been replaced by fan heater units heated by the boiler system. Both have manual ON/OFF/AUTOMATIC options.

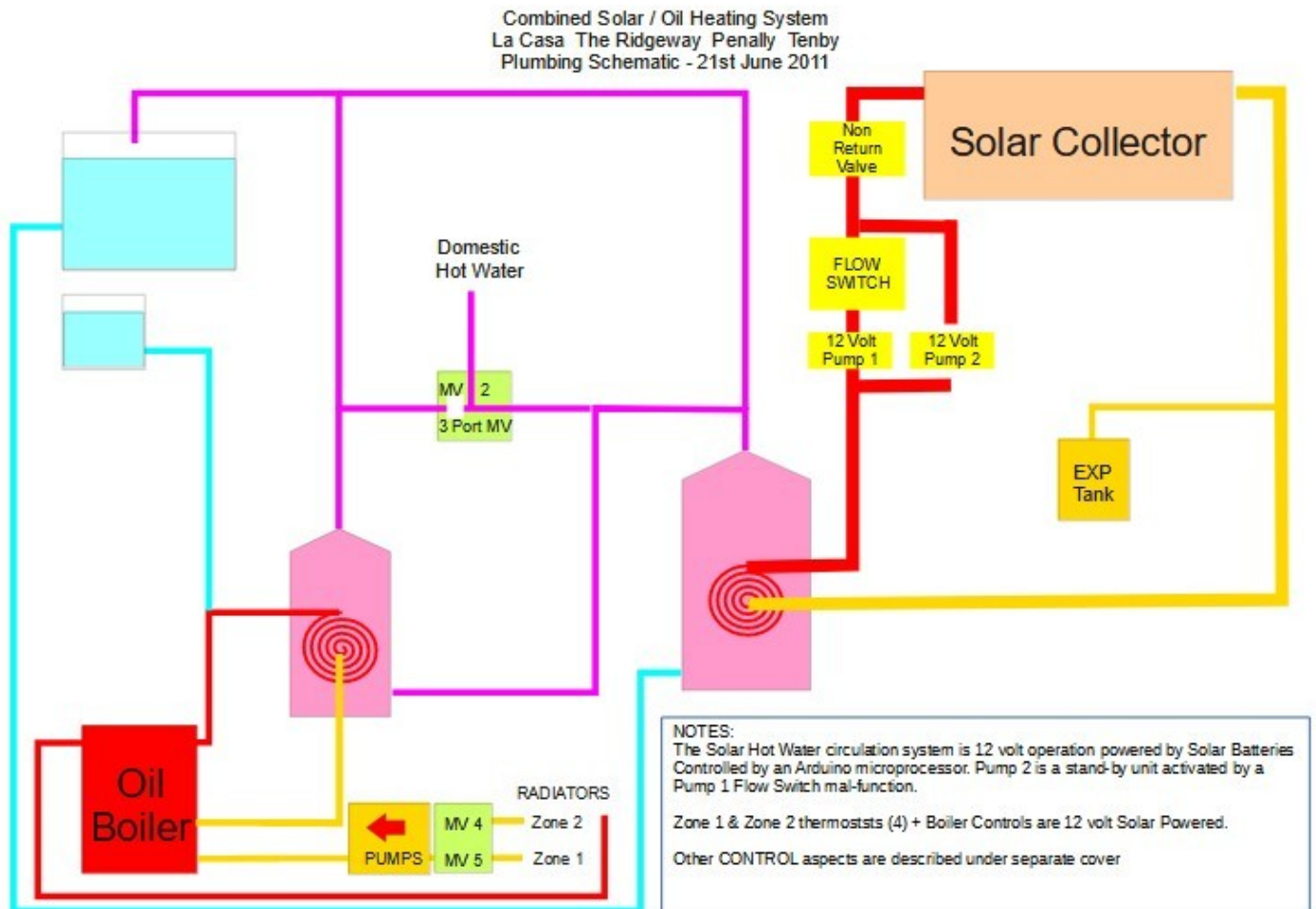
The 4 (low voltage) installed thermostats are switched by internal Mercury Tilt switches (no arcing on contact and will operate forever). This means that you can operate your living area, or bedroom area individually upon dual temperature values and have any one operating without the other. This has proved to be an energy saving bonus by NOT operating unwanted heating.

The system has FROST protection, which automatically switches on the boiler at an external temperature of 5 degrees C or less and passes control to the 2 (high & low) system thermostats. If the system is OFF, it passes control to the LOW RANGE thermostats,



which will be set lower than the normal thermostats for economy reasons. If you were away from home and this system activated, it would not operate at the normal temperature, but at a lower temperature (according to the setting of the LOWER thermostat.) If the heating is set to ON, control is passed to the normal room operating temperature thermostats.

SOLAR HOT WATER SYSTEM



This is now complimented by a 12 volt solar powered hot water system, which runs in tandem with the boiler system. The output from the solar tank is fed to a 2 input motorised diverter valve (MV2 above), which either supplies Solar hot water directly to the domestic hot water system, or alternatively into the normally cold input of the boiler tank. This action is determined by a 3 way manual selector switch on the control panel in the boiler cupboard. The AUTO option automatically selects the hottest hot water tank for output to the taps, but any option can be selected manually. The Solar hot water system has proved to be a substantial bonus during the 30 degree+ summer experienced in 2022. Domestic hot water temperature is controlled by a boiler tank thermostat & MV3 (MAX 60 degrees C).



ABOVE – Diverter Switch: UP = AUTO CENTRE= SOLAR TANK OUTPUT DOWN = BOILER TANK OUTPUT

3 Indicator Pilot lights (on the left):

Top – Orange = Boiler Hot Water tank active Green (centre) Boiler Tank is hottest & selected White = (lower) Frost Stat. Active

Also dual immersion heaters are fitted (one in each hot water tank).

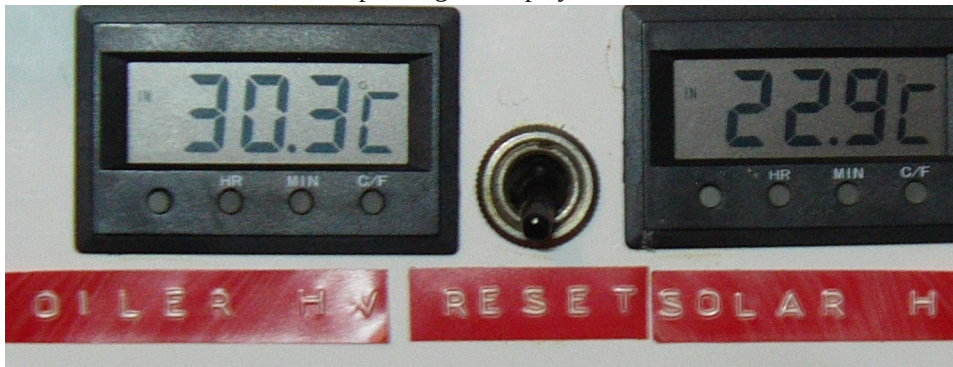
These are controlled by a master ON/OFF switch in the kitchen,

plus an ON/OFF & DIVERT ER switch on the control panel in the boiler cupboard.

You can select which immersion heater to use.

These can also be controlled by a time-switch built into fuse-board No. 2, which is active by de-fault, but a manual 20 amp by-pass switch (located adjacent to fuse-board 2) affords timed, or manual control of these heaters.

The hot water system is further enhanced with a temperature display for each hot water tank providing information that assists the above manual selection. These displays infrequently appear blank, but are easily reset with re-activation of the re-set switch and pressing the display buttons on the left side on the units.



b) Solar Voltaic Power

Powered by two 24v (max 8A per panel) units and stored in series wired 12V batteries (NO grid, or Roof Rental involvement).

The storage batteries output 24 volts or are reduced to 12 volts output by Buck converters, which can be added according to demand. Therefore 24 volt, and/or 12 volt supply options are available from this system.

The solar batteries currently power:

a) Two computer modems (Standard Internet and VPN) meaning their functions are not affected by mains problems at any time.

b) The security system meaning that security cannot be affected by disabling mains availability (typically in the external meter cupboards). The system is equipped with Door & Zone sensors (Zone sensors with optional activation).

c) Back-up mains battery charging in the event of a battery system failure, which is automatically detected, effected and controlled.

d) Boiler control system

12V Fuse Board

e) Water Temperature Sensors & Displays

f) Lounge LED Lighting



Low Voltage Output

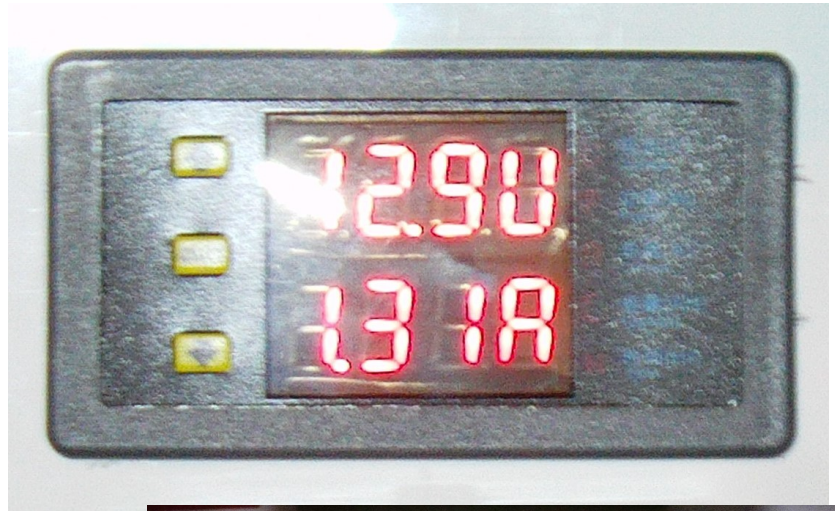
Current demand is also displayed on the control panel. The voltage is set on the system by an adjustable BUCK CONVERTER currently set at around 13V and the displayed current is actual at any given time.

This displays the output voltage & current

12.9 volts
1.31 amps

This type of information affords the ability to understand and control system operation.

Solar Storage Battery Charge Control
Charging is controlled and regulated by an MPPT BUCK & BOOST charge controller. Here the panel input voltage is set to 27 volts to power the 24 volt system. If the panel input voltage exceeds that it is reduced (BUCKED) and if it is lower it is increased (BOOSTED) accordingly.



The panel displays (top to bottom – left):

Panel Input Voltage
Battery charge voltage
Current charge rate in AMPS
Current power input in WATTS
KWH capacity for this period
Active duration today

The 3 colour indicator on the right:

RED = Max charge available being fed
RED+YELLOW charge controlled according to battery voltage
RED+YELLOW+WHITE batteries charged & charge restricted

A wide range of options available in the set-up.

The unit itself is not battery powered. It is solar panel powered.
It activates at sunrise and de-activates at sunset, so no over-night system drain.



Lighting Features

The property has a mixture of 240v mains and dedicated 12v lighting (LED and Fluorescent).

1) Mains lighting points are all equipped with low energy lamps (mainly LED).

The kitchen has a 5 foot LED tube and recessed 12 volt LED ceiling lights. First floor work rooms have 5 x 5 foot LED tubes.

2) The lounge is equipped with hidden battery powered 12v LED strip lighting and a dual LED (mains, or 12v DC) feature centre lighting

The 12v system lighting in the lounge is powered by the Solar batteries and so runs free-of-charge. They operate with a remote control dimmer units.

GENERAL DOCUMENT DESCRIPTION ENDS

Sale inclusions and exclusions are listed below

Sale Offer Exclusions

The Home Entertainment equipment is NOT included in any sale understanding, unless suitably agreed to the contrary.

The lounge currently equipped with a Yamaha 7.1 surround sound system with 18 individual speakers for refined sound quality, although the combined audibility is capable of blowing the roof off.

Also a quality Optoma video projector and a 2m x 2.5m retractable video screen.

All Portable Appliances

Laundry/drying/gardening/tooling/non-fitted furniture/computer modems/fitness equipment

Sale Offer Inclusions

The sale offer does include:

GENERAL

- 1) FITTED UNITS (wardrobes, curtains, carpets, lighting)
- 2) Security System with door & zone sensor activation
- 3) 24 volt & 12 volt Solar Battery System (see specification)
- 4) 12 volt Solar Hot Water system

KITCHEN

- 1) Bosch electric cooker with Ceramic hob
- 2) Samsung American style Side-By-Side fridge-freezer with a built-in ice machine).
- 3) Bosch dish washer
- 4) Waste Disposal Unit & Extractor Fan

LOUNGE

- 1) Large Ceiling Fan (1.5 metre diameter)

GARAGE

- 1) 12 volt battery supply system (solar panel with charge control & batteries)