



Rainwater round the building – using no mains electricity

Rainwater management systems either pump stored rainwater directly from the storage tank to where it is needed or pump the rainwater to a header tank which gravity feeds appliances. The Rain Director[®] is a gravity-feed system but differs crucially from others, not only by its automatic and user-controlled functions, but also because the header tank empties to the bottom sensor before being refilled. In this way the pump is only activated when the header tank is empty rather than every time, for example, a WC is flushed. As a result, electricity use is already reduced, depending on the model, by a factor of 5.

The Solar Rain Director[®] reduces electricity use to virtually nothing. A small solar panel, a submersible 12volt pump and a battery ensure rainwater can be pumped to the header tank without any use of mains electricity. The control panel is also powered by the battery and solar power. Our tests have shown that even on a cloudy day, this state-of-the-art amorphous solar panel with blocking diode delivers 6 times the charge (watt-hours) than would be necessary for a normal 4-person home's rainwater use.

Technical Specifications

1) Solar (Photo Voltaic) Panel

- Amorphous solar panel charger.
- Charges even in overcast weather.
- Blocking diode prevents reverse charging and protects battery discharge.
- Optimum output current 580 MilliAmps.
350 milliamps on our test bench.
- Charging power: 12 watts nominal power.
Measured over time at an effective 8 watts when charging a car-type lead-acid battery.
- This panel, in typical UK conditions, even cloudy, generates 6 times the amount of power needed by the Rain Director[®] of a 4 person home (toilets, washing machine and some garden watering)
- External dimensions 98(L) x 34(W) x 1.5(D) cm



2) Pump and pressure switch

1. Self-priming and fully submersible pump left in the water permanently, controlled by the Rain Director control panel and a 1.4 bar pressure switch.
2. 12V DC Comet DUPLO made in Germany
3. Flow rate: 34 litres/min.
4. Head: 1.8 bar nominal but down to 1 bar at 12 metres above pump
5. Power consumption: 50 watts
6. Dimensions: 250 (L) x 42 (diameter) mm.
7. Dual pump option if the header tank is more than 12 metres above the base of the underground storage tank.





3) Battery

- No-spill gel battery 45 amp-hours 12 volt
- Option for client to use their own 12 volt car battery or similar. New battery not required, so this is a further eco feature.

4) Rain Director® Control panel:

Similar in looks to the WRAS-approved RD-01 Rain Director® with indicator lights and user-controllable feature. See www.RainDirector.co.uk.



This item is available on its own for other applications; please contact us. Image available mid-Feb.

The Charge Director gives four indications from its 3 coloured lights...



Green: battery is OK.



Yellow: primary (the solar panel) is charging.



Red: Charging from mains. Flashing red: mains switched off or system error.

- Mains input 230 Volts AC. Output 18 volts DC nominal, corrected to battery or pump voltage as required.
- Solar (Photo Voltaic) panel voltage corrected from 22 volts down to 13.8 Volts DC for battery charging
- Pulse-switched zero-trickle PSU (Mains charger)

6) Smart header tank: Exactly the same unit as for the RD-01 and RD-02. 91 litre tank for the roof space feeds rainwater to the appliances by gravity. Level sensors ensure control panel functions including flushing rainwater back to storage tank when occupants away, filling header with mains water, to avoid bacterial activity and discoloured water on return. The level sensors are heavy duty 120 watt rated so that they can take the surge from the 12 volt battery and pump without damage.



7) Cabling:

0.75 mm dual core (red and black) cable provided for...

- 1) Mains converter to Charge Director – 0.5 metres
- 2) Solar panel to Charge Director – 10 metres
- 3) Charge Director to Battery - 3 metres
- 4) Battery to Control Panel – 2 metres ... and
- 5) 10 metres of 1.5mm dual core cable for Battery to Pump submerged in underground storage tank. Float switch and pressure switch in storage tank are pre-wired.

8) Piping:

10 metres of ½ inch flexible piping is provided to link the pump and pressure switch to the control panel in the building. Piping to header tank and appliance provided by the client.

All other functional features are as the Rain Director® RD-01. The Solar Rain Director® RD-04 costs **£1,199** (including VAT and delivery England and Wales) or **£1,099** without the 12 volt battery.

Available online or by phone from www.rainwaterharvesting.co.uk and other enlightened distributors. Please order online or by phone... or email us at sales@rainwaterharvesting.co.uk to signal your interest.

Comparison of the features of each Rain Director® model

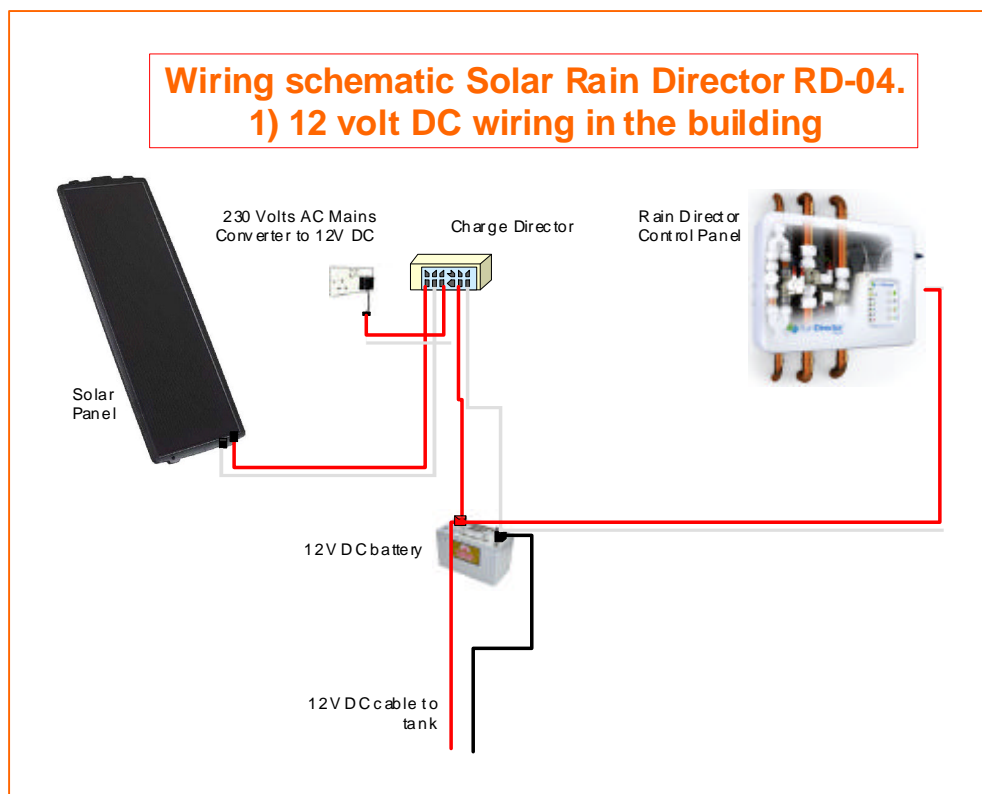
Summary features	RD-01 Rain Director®	RD-02 Rain Director® Super Eco	RD-03 Rain Director® Plus	RD-04 Solar Rain Director®
Power	230 VAC mains	230 VAC mains	230 VAC mains	12 V DC solar
Pump	Pressure sensitive	Electrically switched	Pressure sensitive	Electrically switched
Flow rate	3000 litres/hr	3000 litres/hr	3000 litres/hr	1200 litres/hr
Pressure	5 bar at pump	5 bar at pump	5 bar at pump	1 bar 10m above pump
Head	45 metres	45 metres	45 metres	15 metres
Consumption	1100 watts	1100 watts	1100 watts	30 watts
Time to fill 100 litres	2 minutes	2 minutes	2 minutes	5 minutes
Features	Powers garden sprinkler	Garden watering by gravity drip feed	Level gauge	No mains electricity use, gravity feed

- Commercial scale variants of each model are available to order, including
1. larger volume header tanks (1000 and 2000 litre product IDs available)
 2. level gauge (press two buttons and left hand lights show rainwater level)
 3. BMS (Building Management System) connections,
 4. larger pipes for high debit water delivery, and
 5. bespoke heavy duty control panels.

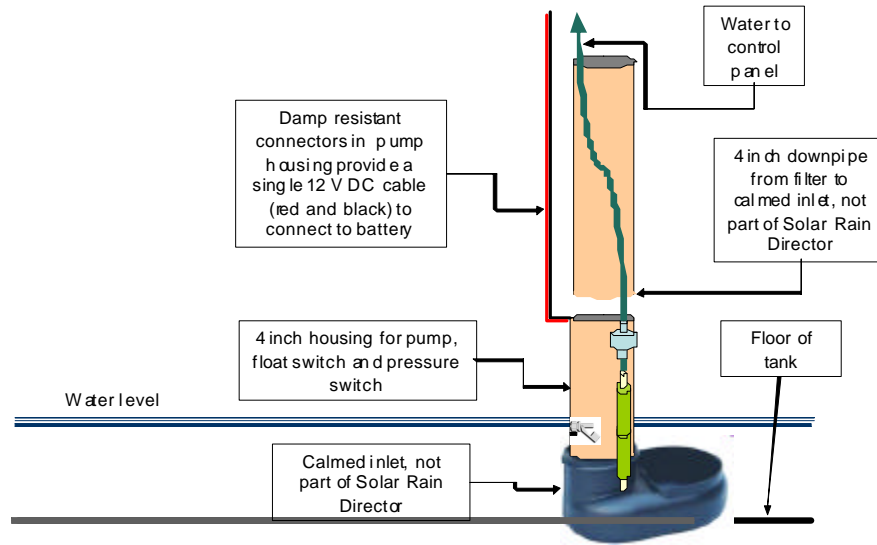
Diagram of typical Solar Rain Director® installation



Piping and electrical layout of the Solar Rain Director® RD-04 in the building is identical to RD-01 except with the addition of the solar panel mounted on an unobscured South or West facing wall and a 12 volt battery in a cool secluded space.



**Wiring schematic Solar Rain Director RD-04.
2) 12 volt DC wiring and piping in tank**



RainWater Harvesting Limited provides tanks and components conceived and manufactured to conform not only to the applicable British norms (The Environment Agency's Code for Sustainable Homes, BREAAAM, WRAS, the UK Building Regulations and the Code of Practice for rainwater harvesting systems BS 8515-2009) but also to international quality standards ISO9001 Design & Build, EN976, EN858, TÜV or CE. Most of our products are listed on the Water Technology List (WTL), which provides information on water-saving products that qualify for up-front tax relief for commercial companies.



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