

Water Source: Split and Multi-Split (including Variable Refrigerant Flow) Heat Pumps

Date added to ETL 2002 (Revised 2009).

1. Definition of Technology

Water source heat pumps are products that are specifically designed to transfer heat from water (in an internal water loop) into the air within the space to be heated by means of a refrigeration cycle.

'Split' type heat pumps have separate heat collection and rejection units for each space known as 'indoor' and 'outdoor' units. The 'indoor' and 'outdoor' units are specifically designed to be connected together during installation by refrigerant pipework to form a single functional unit.

Variable refrigerant flow (VRF) heat pumps are specifically designed to automatically adjust the flow of refrigerant to each indoor unit so that the heat delivered is matched to the demand.

2. Technology Description

Water source split and multi-split heat pumps use an electrically operated refrigeration system to transfer heat from an internal water loop into the air within the space to be heated. They can be used to provide space heating in a wide range of buildings, and some products also are able to provide cooling by reversing the refrigeration flows around the product. (These products are known as reversible 'water cooled' air conditioning units).

Water source split and multi-split heat pumps are available with a range of efficiencies. The ECA Scheme aims to encourage the purchase of higher efficiency products.

The ECA Scheme covers four categories of products:

1. **Water source: single split (non-VRF) heat pumps**
that consist of one 'outdoor' unit and one 'indoor' unit
2. **Water source: dual split (non-VRF) heat pumps**
that consist of one 'outdoor' unit and two or more 'indoor' units.
3. **Water source: multi-split (non-VRF) heat pumps**
that consist of one 'outdoor' unit connected to two or more 'indoor' units using either individual refrigerant circuits (with the indoor units individually controlled) or using a common refrigerant circuit with the indoor units controlled as one.
4. **Water source: split or multi-split variable refrigerant flow (VRF) heat pumps**
that consist of one 'outdoor' unit connected to one or more 'indoor' units using a common refrigerant circuit with the indoor units individually controlled.

Investments in water source split and multi-split (including variable refrigerant flow) heat pumps can only qualify for Enhanced Capital Allowances if the specific product identified by the outdoor unit and the matching indoor unit(s) is named in the ETL Heat Pump Master List. To be eligible for inclusion on the ETL Heat Pump Master List, products must meet the eligibility criteria as set out below AND the Heat Pump Master List Listing Mechanism.

3. Eligibility Criteria

To be eligible, products must:

- Consist of an ‘outdoor’ unit and one or more ‘indoor’ units that are:
 - a) Factory-built sub-assemblies.
 - b) Supplied as a matched set of units.
 - c) Designed to be connected together during installation.
- Incorporate an electrically driven refrigeration system.
- Be designed for, and include fittings for, permanent installation.
- Be CE marked.

Performance criteria

Eligible products must meet the performance criteria set out in Table 1 below for:

- Coefficient of Performance (COP), across the range of connected capacities and including 100% (full) load in heating mode.
- Energy Efficiency Ratio (EER) across the range of connected capacities including 100% (full) load, where the product is designed to provide cooling.

Table 1 Performance thresholds for water source split and multi-split heat pumps

	Product Category	Heating mode (COP)	Cooling mode (EER)
1.	Water source: single split (non-VRF) heat pumps	>3.70	>3.30
2.	Water source: dual split (non-VRF) heat pumps	>3.70	>3.30
3.	Water source: multi-split (non-VRF) heat pumps	>3.70	>3.30
4.	Water source: split and multi-split variable refrigerant flow (VRF) heat pumps	>4.10	>3.50

">" means "greater than"

For the avoidance of doubt test data should be presented to 2 decimal places. As an example, a water source single split (non VRF) product with a heating mode COP of 3.70 would be deemed to be a fail.

Required test procedures

All products must be tested in accordance with the procedures in BS EN 14511:2007 (or BS EN 14511:2004). The standard rating conditions are set out in the Table 2 below.

Table 2 Test conditions for water source split and multi-split heat-pumps

	Product Category		Heating mode (COP)	Cooling mode (EER)
1.	Water source: single split (non-VRF) heat pumps		BS EN 14511-2:2007 Table 5 Standard rating Conditions, Water loop.	BS EN 14511-2:2007 Table 6 Standard rating Conditions, Comfort.
2.	Water source: dual split (non-VRF) heat pumps		BS EN 14511-2:2007 Table 16 Standard rating Conditions, Water loop.	BS EN 14511-2:2007 Table 17 Standard rating Conditions.
3.	Water source: multi-split (non-VRF) heat pumps		BS EN 14511-2:2007 Table 16 Standard rating Conditions, Water loop.	BS EN 14511-2:2007 Table 17 Standard rating Conditions.
4.	Water source: split and multi-split variable refrigerant flow (VRF) heat pumps:	Single split	BS EN 14511-2:2007 Table 5 Standard rating Conditions, Water loop.	BS EN 14511-2:2007 Table 6 Standard rating Conditions, Comfort.
		Multi-split	BS EN 14511-2:2007 Table 16 Standard rating Conditions, Water loop.	BS EN 14511-2:2007 Table 17 Standard rating Conditions.

4. Scope of Claim

Expenditure on the provision of plant and machinery can include not only the actual costs of buying the equipment, but other direct costs such as the transport of the equipment to site, and the direct costs of installation. Clarity on the eligibility of direct costs is available from [HMRC](#).