

**13.0 Bill of quantities: Air Conditioning System**

Item Number	Description	Quantity	Unit
	<b>GROUND AND FIRST FLOOR LEVELS</b>		
	<b>Supply, deliver to site, test and commission DC inverter 2-pipe cooling or heating VRF air-conditioning system including sheathed communication wiring, thermal insulated copper pipework, PVC drain pipework and IR controllers allowing for the labour and other hardware required.</b>		
13.01	Top-flow discharge modular 40kW VRV/VRF1.0 outdoor unit running on R410a refrigerant complete with rubber anti-vibration blocks beneath the unit allowing for connecting-up and wiring from equipment to isolator, additional refrigerant gas and other necessary mounting hardware.	1	No.
	<b>Supply, install, test and commission the following indoor units complete with wall mounted wired controllers, supply and return plenums, flexible ducting, grilles and other connecting accessories. Type and finish of grilles shall be determined at a later stage by client.</b>		
13.02	High-wall type indoor unit - 3.6kW Nominal cooling capacity	0	No.
13.03	Cassette type indoor unit - 3.6kW Nominal cooling capacity	11	No.
13.04	Cassette type indoor unit - 4.5kW Nominal cooling capacity	1	No.
13.05	Wall mounted remote LCD display controllers as specified	5	No.
	<b>Supply, deliver to site, install and test for leakages (pressure testing with nitrogen gas at 35bar for 24 hr), the following pipework. Pipework lengths shall include any necessary fittings, supporting U-channel brackets and pipe rings, insulation complete with polysolene offering UV protection. Detail of material and type of proposed supporting brackets shall be supplied with the offer. Drain pipes shall be installed to the nearest drain gully. Installation shall only commence after approval in writing of the type of supports to be used. Brackets and supports shall be galvanised and spacing shall be as suggested by the pipe manufacturer. Concrete blocks to support U-channels as specified, shall be deemed to have been included in the rate:</b>		

13.06	Insulated twin main refrigerant copper pipe work suitable for R410a applications complete with ref net factory supplied joints.	95	m
	<b>Supply, deliver to site, install, test and commission PVC condensate drain pipes allowing for the labour required for chasing in stone walls and the necessary fittings required for a complete installation. Pipes to be lagged. Drain stacks are not included.</b>		
13.07	20mm diameter UPVC condensate drain pipework	40	m
13.08	25mm diameter UPVC condensate drain pipework	35	m
13.09	32mm diameter UPVC condensate drain pipework	25	m

**Total carried forward to next page**

**13.0 Bill of quantities: Air Conditioning System**

Item Number	Description	Quantity	Unit
-------------	-------------	----------	------

**Total brought forward from previous page**

	<b>Supply and install the following:</b>		
13.10	Control and power cabling suitably laid in conduit to/from controllers and to/from indoor and outdoor units, together with cabling from isolators provided by others and equipment.	1	Lump Sum
	<b>FIRST FLOOR LEVEL - SERVER ROOM</b>		
	<b>Supply, install, test and commission the following, complete with wireless remote controller, pipe rings, U-channel brackets and other necessary accessories to provide a complete installation.</b>		
13.11	3.6 kW (cooling only) split type high wall unit, wall mounted wired controller, refrigerant type R410A.	1	No.
13.12	Insulated twin main refrigerant copper pipe work suitable for R410a applications complete with ref net factory supplied joints.	30	m
	<b>Supply, deliver to site, install, test and commission PVC condensate drain pipes allowing for the labour required for chasing in stone walls and the necessary fittings required for a complete installation. Pipes to be lagged. Drain stacks are not included.</b>		
13.13	20mm diameter UPVC condensate drain pipework	30	m
	<b>Supply and install the following:</b>		
13.14	Control and power cabling suitably laid in conduit to/from controllers and to/from indoor and outdoor units, together with cabling from isolators provided by others and equipment.	1	Lump Sum
	<b>SECOND, THIRD AND FOURTH FLOOR LEVELS</b>		

	<b>Supply, deliver to site, test and commission DC inverter 2-pipe cooling or heating VRF air-conditioning system including sheathed communication wiring, thermal insulated copper pipework, PVC drain pipework and IR controllers allowing for the labour and other hardware required.</b>		
13.15	Top-flow discharge modular 45kW VRV/VRF outdoor unit running on R410a refrigerant complete with rubber anti-vibration blocks beneath the unit allowing for connecting-up and wiring from equipment to isolator, additional refrigerant gas and other necessary mounting hardware.	1	No.
	<b>Supply, install, test and commission the following indoor units complete with wall mounted wired controllers, supply and return plenums, flexible ducting, grilles and other connecting accessories. Type and finish of grilles shall be determined at a later stage by client.</b>		
13.16	High-wall type indoor unit - 3.6kW Nominal cooling capacity	0	No.
13.17	Cassette type indoor unit - 3.6kW Nominal cooling capacity	10	No.
13.18	Cassette type indoor unit - 4.5kW Nominal cooling capacity	2	No.
13.19	Wall mounted remote LCD display controllers as specified	5	No.

**Total carried forward to next page**

**13.0 Bill of quantities: Air Conditioning System**

Item Number	Description	Quantity	Unit
-------------	-------------	----------	------

**Total brought forward from previous page**

	<b>Supply, deliver to site, install and test for leakages (pressure testing with nitrogen gas at 35bar for 24 hr), the following pipework. Pipework lengths shall include any necessary fittings, supporting U-channel brackets and pipe rings, insulation complete with polysolene offering UV protection. Detail of material and type of proposed supporting brackets shall be supplied with the offer. Drain pipes shall be installed to the nearest drain gully. Installation shall only commence after approval in writing of the type of supports to be used. Brackets and supports shall be galvanised and spacing shall be as suggested by the pipe manufacturer. Concrete blocks to support U-channels as specified, shall be deemed to have been included in the rate:</b>		
--	--	--	--

13.20	Insulated twin main refrigerant copper pipe work suitable for R410a applications complete with ref net factory supplied joints.	110	m
	<b>Supply, deliver to site, install, test and commission PVC condensate drain pipes allowing for the labour required for chasing in stone walls and the necessary fittings required for a complete installation. Pipes to be lagged. Drain stacks are not included.</b>		
13.21	20mm diameter UPVC condensate drain pipework	80	m
13.22	25mm diameter UPVC condensate drain pipework	55	m
13.23	32mm diameter UPVC condensate drain pipework	30	m
	<b>GENERAL</b>		
	<b>Supply, install, test and commission:</b>		
13.24	Centralised AC controller for all VRF systems (VRF 1.0 and VRF 2.0) complete with touch sensitive coloured LCD display including all the necessary wiring and connecting-up required for a complete installation. Item shall include software and interface to PC.	1	Lump Sum
	<b>Supply and install the following:</b>		
13.25	Control and power cabling suitably laid in conduit to/from controllers and to/from indoor and outdoor units, together with cabling from isolators provided by others and equipment.	1	Lump Sum
	<b>Electrical works</b>		
13.26	Wiring including any necessary conduit, fittings etc. between the power supply point ( switch disconnecter by others) and the indoor / outdoor unit. Quote lump sum for all units.	1	Lump Sum
	<b>Civil Works</b>		
13.27	This item includes drilling of holes through non-load bearing stone walls, floors and ceilings, chasing if and when required, making good of and support of equipment including the installation of RSJ's for the outdoor units. Contractor is expected to allow for a contingency sum for such works.	1	Lump Sum

**Total carried forward to next page**

**13.0 Bill of quantities: Air Conditioning System**

Item Number	Description	Quantity	Unit
	<b>Total brought forward from previous page</b>		
	<b>Testing and commissioning</b>		
13.28	Set, programme, test, commission and certify all equipment and complete installation	1	Lump Sum

13.29	Provide necessary training to the system users	1	Lump Sum
13.30	Provide 'As fitted drawings' in the form of three sets of prints and one copy on CD-ROM in ACAD format organised in layers including reference to schedules to all plant and equipment including manufacturer, models, settings, etc.	1	Lump Sum

**Total carried forward to Item 13.0 in Summary Page**

Rate € (Excluding VAT)	Total € (Excluding VAT)
€ -	€ -
€ -	€ -
€ -	€ -
€ -	€ -
€ -	€ -

€ -	€ -
€ -	€ -
€ -	€ -
€ -	€ -
	€ -

Rate € (Excluding VAT)	Total € (Excluding VAT)
	€ -
€ -	€ -
€ -	€ -
€ -	€ -
€ -	€ -
€ -	€ -

€ -	€ -
€ -	€ -
€ -	€ -
€ -	€ -
€ -	€ -
	€ -

Rate € (Excluding VAT)	Total € (Excluding VAT)
------------------------------	-------------------------------

	€ -



€ -	€ -
€ -	€ -
€ -	€ -
€ -	€ -
€ -	€ -
€ -	€ -
€ -	€ -
€ -	€ -
	€ -
<b>Rate € (Excluding VAT)</b>	<b>Total € (Excluding VAT)</b>
	€ -
€ -	€ -

€ -	€ -
€ -	€ -
	€ -