

**C1.2.8 Mechanical Installation - Bill NO.18: PRICING SUMMARY - SANSA MATJIESFONTEIN**

- 1 All rates are considered supplied, installed, tested, commissioned and handover of all equipment, including verification of equipment functionality, including 12 months guarantee and maintenance.
- 2 All values in this BoQ are to be exclusive of 15% VAT, unless otherwise indicated.
- 3 Pricing summary to be read in conjunction with drawings P3589-M-01 and P3589-M-04 including tender specification.
- 4 Canvas Collars to be allowed for between all fan / attenuators (if applicable).
- 5 All AC units return air grilles curved blade, hinged type with viledon filter, complete and fully functional with GSM plenum boxes internally insulated with 25mm thick sonic liner (if required)
- 6 All product specific items (fans and attenuators) specified could be supplied as such, or the approved alternative.
- 7 Main Offer: Ducted Hide-Aways/ Midwall Splits/ Cassettes to be either Daikin or Samsung DX type inverter split units R410A.
- 8 Main Offer: CRAC's to be either **Stulz, Carrier or Inramech**.
- 9 All High Static indoor units supply air duct work must be internally insulated with 25mm thick sonic liner: Hide-Away AC units systems (if required).
- 10 Return air plenums on Hide-Away AC units to be internally insulated for break-out noise.
- 11 Indoor units to be supplied with hard wire remote controller. Ø75 draw box with 25mm conduit.
- 12 All remote Condensing units heat exchanger coils are to be Bluchem treated.
- 13 All refrigeration piping, are to be selected by the equipment suppliers to suit the installation application requirements.
- 14 All indoor equipment selections must be based on on-coil of **24°C DB / 17.1°C WB** and meet the sensible load requirements.
- 15 Allowance for condensate drain piping with clear hose to within 1000mm of AC unit to be allowed for by AC Contractor
- 16 Condensate drain point will be provided by Plumber adjacent to AC units at both indoor and outdoor units
- 17 Power Supply to Local isolator are to be provided complete and fully functional with overload protection by site electrician at the indoor and outdoor units, and at each of the mechanical ventilation fan system as well as at each HVAC Electrical DB Panels as shown on the drawings.
- 18 Flashing around weather louvres is by others: Roofing Contractor
- 19 Duty/Standby controls to be allowed for in areas where indicated. Units to automatically switch between duty and standby without any interruptions - controls to allow for this
- 20 NASA equipment room temperature to be maintained between 18°C -23°C DB with humidity range between 45-55% RH. CRAC unit configuration to allow for N+1 control and equal run time between units. CRAC units to be selected with on-board dehumidification and humidification control. CRAC units to be compatible with external ATS (provided by site electrician).
- 21 SANSA equipment room and NOC temperature to be maintained between 18°C -23°C DB with humidity range between 45-55% RH. CRAC unit configuration to allow for N+1 control and equal run time between units. CRAC units to be selected with on-board dehumidification and humidification control. CRAC units to be compatible with external ATS (provided by site electrician).

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Item	Location	Reference	Description	Unit	Qty	Rate R (Excl 15% VAT)	Total R (Excl 15% VAT)
4.1	MAIN BUILDING		<b>PRELIMINARIES (Carried Forward from Annexure)</b>	no	1	R	R
4.2			<b>AIR-CONDITIONING &amp; MECHANICAL VENTILATION</b>				
4.2.1			<b><u>AIR-CONDITIONING: GROUND FLOOR</u></b>				
4.2.1.1		AC-G.01	<b>3kW Midwall Split Unit,</b> <i>(Supply and installation of the indoor and outdoor unit; inclusive of copper refrigerant piping, bends, valves and fittings; cable trays, supports, fixing and insulation; power and control cabling, wiring to local isolator, remote controller and condensate drain)</i>	no	1	R	R
		AC-G.02	<b>3kW Midwall Split Unit,</b> <i>(Supply and installation of the indoor and outdoor unit; inclusive of copper refrigerant piping, bends, valves and fittings; cable trays, supports, fixing and insulation; power and control cabling, wiring to local isolator, remote controller and condensate drain)</i>	no	1	R	R
		AC-G.03	<b>3kW Midwall Split Unit,</b> <i>(Supply and installation of the indoor and outdoor unit; inclusive of copper refrigerant piping, bends, valves and fittings; cable trays, supports, fixing and insulation; power and control cabling, wiring to local isolator, remote controller and condensate drain)</i>	no	1	R	R
		AC-G.04	<b>3kW Midwall Split Unit,</b> <i>(Supply and installation of the indoor and outdoor unit; inclusive of copper refrigerant piping, bends, valves and fittings; cable trays, supports, fixing and insulation; power and control cabling, wiring to local isolator, remote controller and condensate drain)</i>	no	1	R	R
		AC-G.05	<b>5kW Midwall Split Unit,</b> <i>(Supply and installation of the indoor and outdoor unit; inclusive of copper refrigerant piping, bends, valves and fittings; cable trays, supports, fixing and insulation; power and control cabling, wiring to local isolator, remote controller and condensate drain)</i>	no	1	R	R
		AC-G.06	<b>5kW Midwall Split Unit,</b> <i>(Supply and installation of the indoor and outdoor unit; inclusive of copper refrigerant piping, bends, valves and fittings; cable trays, supports, fixing and insulation; power and control cabling, wiring to local isolator, remote controller and condensate drain)</i>	no	1	R	R
		AC-G.07	<b>5kW Midwall Split Unit,</b> <i>(Supply and installation of the indoor and outdoor unit; inclusive of copper refrigerant piping, bends, valves and fittings; cable trays, supports, fixing and insulation; power and control cabling, wiring to local isolator, remote controller and condensate drain)</i>	no	1	R	R
		AC-G.08	<b>5kW Midwall Split Unit,</b> <i>(Supply and installation of the indoor and outdoor unit; inclusive of copper refrigerant piping, bends, valves and fittings; cable trays, supports, fixing and insulation; power and control cabling, wiring to local isolator, remote controller and condensate drain)</i>	no	1	R	R
		AC-G.09	<b>10kW Ducted Hide Away Split Unit,</b> <i>(Supply and installation of the indoor and outdoor unit; inclusive of copper refrigerant piping, bends, valves and fittings; cable trays, supports, fixing and insulation; power and control cabling, wiring to local isolator, remote controller and condensate drain; ducting, transformation pieces, plenum boxes, stop ends, canvas collars, spigots, flexibles and air-terminals)</i>	no	1	R	R
		AC-G.10	<b>10kW Ducted Hide Away Split Unit,</b> <i>(Supply and installation of the indoor and outdoor unit; inclusive of copper refrigerant piping, bends, valves and fittings; cable trays, supports, fixing and insulation; power and control cabling, wiring to local isolator, remote controller and condensate drain; ducting, transformation pieces, plenum boxes, stop ends, canvas collars, spigots, flexibles and air-terminals)</i>	no	1	R	R

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4.2.1.2	NASA EQUIPMENT ROOM	AC-G.28	<b>5kW Cassette Split Unit,</b> (Supply and installation of the indoor and outdoor unit; inclusive of copper refrigerant piping, bends, valves and fittings; cable trays, supports, fixing and insulation; power and control cabling, wiring to local isolator, remote controller and condensate drain)	no	1	R	R
		AHU-G.01	<b>42kW Ducted Air Handling Split Unit,</b> (Supply and installation of the indoor and outdoor unit; inclusive of copper refrigerant piping, bends, valves and fittings; cable trays, supports, fixing and insulation; power and control cabling, wiring to local isolator, remote controller and condensate drain; ducting, transformation pieces, plenum boxes, stop ends, canvas collars, spigots, flexibles, weather louvres and air-terminals)	no	1	R	R
		CRAC-01	<b>34.1kW Computer Room Air-Conditioning Unit,</b> (Supply and installation of indoor and outdoor unit; inclusive of copper refrigerant piping, bends, valves, fittings, P-traps and oil separator; cable trays, supports, fixing and insulation; power and control cabling, wiring to local isolator, on-board controller, N+1 control and condensate drain; floor stand, anti-vibration mounts, plenum box, on-board humidifier, temperature sensors and air-terminals)	no	1	R	R
		CRAC-02	<b>34.1kW Computer Room Air-Conditioning Unit,</b> (Supply and installation of indoor and outdoor unit; inclusive of copper refrigerant piping, bends, valves, fittings, P-traps and oil separator; cable trays, supports, fixing and insulation; power and control cabling, wiring to local isolator, on-board controller, N+1 control and condensate drain; floor stand, anti-vibration mounts, plenum box, on-board humidifier, temperature sensors and air-terminals)	no	1	R	R
		CRAC-03	<b>34.1kW Computer Room Air-Conditioning Unit,</b> (Supply and installation of indoor and outdoor unit; inclusive of copper refrigerant piping, bends, valves, fittings, P-traps and oil separator; cable trays, supports, fixing and insulation; power and control cabling, wiring to local isolator, on-board controller, N+1 control and condensate drain; floor stand, anti-vibration mounts, plenum box, on-board humidifier, temperature sensors and air-terminals)	no	1	R	R
	SANSa EQUIPMENT ROOM	AC-G.29	<b>7kW Midwall Split Unit,</b> (Supply and installation of the indoor and outdoor unit; inclusive of copper refrigerant piping, bends, valves and fittings; cable trays, supports, fixing and insulation; power and control cabling, wiring to local isolator, remote controller and condensate drain)	no	1	R	R
		AC-G.30	<b>7kW Midwall Split Unit,</b> (Supply and installation of the indoor and outdoor unit; inclusive of copper refrigerant piping, bends, valves and fittings; cable trays, supports, fixing and insulation; power and control cabling, wiring to local isolator, remote controller and condensate drain)	no	1	R	R
		CRAC-04	<b>15.9kW Computer Room Air-Conditioning Unit,</b> (Supply and installation of indoor and outdoor unit; inclusive of copper refrigerant piping, bends, valves, fittings, P-traps and oil separator; cable trays, supports, fixing and insulation; power and control cabling, wiring to local isolator, on-board controller, N+1 control and condensate drain; floor stand, anti-vibration mounts, plenum box, on-board humidifier, temperature sensors and air-terminals)	no	1	R	R
		CRAC-05	<b>15.9kW Computer Room Air-Conditioning Unit,</b> (Supply and installation of indoor and outdoor unit; inclusive of copper refrigerant piping, bends, valves, fittings, P-traps and oil separator; cable trays, supports, fixing and insulation; power and control cabling, wiring to local isolator, on-board controller, N+1 control and condensate drain; floor stand, anti-vibration mounts, plenum box, on-board humidifier, temperature sensors and air-terminals)	no	1	R	R
		CRAC-06	<b>15.9kW Computer Room Air-Conditioning Unit,</b> (Supply and installation of indoor and outdoor unit; inclusive of copper refrigerant piping, bends, valves, fittings, P-traps and oil separator; cable trays, supports, fixing and insulation; power and control cabling, wiring to local isolator, on-board controller, N+1 control and condensate drain; floor stand, anti-vibration mounts, plenum box, on-board humidifier, temperature sensors and air-terminals)	no	1	R	R
		<b>VENTILATION: GROUND FLOOR</b>					
4.2.2 4.2.2.1	MAIN BUILDING	FA-G.01	<b>Mechanical Fresh Air,</b> (Supply and installation of axial flow fan, sound attenuators, canvas collars, anti-vibration mounts and wiring to local isolator; ducting, transformation pieces, plenum boxes, stop ends, filter boxes, spigots, balancing dampers, flexibles, weather louvre and air-terminals; system complete and fully functional)	no	1	R	R
		FA-G.02	<b>Mechanical Fresh Air,</b> (Supply and installation of axial flow fan, sound attenuators, canvas collars, anti-vibration mounts and wiring to local isolator; ducting, transformation pieces, plenum boxes, stop ends, filter boxes, spigots, balancing dampers, flexibles, weather louvre and air-terminals; system complete and fully functional)	no	1	R	R
		FA-G.03	<b>Mechanical Fresh Air,</b> (Supply and installation of axial flow fan, sound attenuators, canvas collars, anti-vibration mounts and wiring to local isolator; ducting, transformation pieces, plenum boxes, stop ends, filter boxes, spigots, balancing dampers, flexibles, weather louvre and air-terminals; system complete and fully functional)	no	1	R	R
		FA-G.04	<b>Mechanical Fresh Air,</b> (Supply and installation of axial flow fan, sound attenuators, canvas collars, anti-vibration mounts and wiring to local isolator; ducting, transformation pieces, plenum boxes, stop ends, filter boxes, spigots, balancing dampers, flexibles, weather louvre and air-terminals; system complete and fully functional)	no	1	R	R
		FA-G.05	<b>Mechanical Fresh Air,</b> (Supply and installation of axial flow fan, sound attenuators, canvas collars, anti-vibration mounts and wiring to local isolator; ducting, transformation pieces, plenum boxes, stop ends, filter boxes, spigots, balancing dampers, flexibles, weather louvre and air-terminals; system complete and fully functional)	no	1	R	R
		FA-G.06	<b>Mechanical Fresh Air,</b> (Supply and installation of axial flow fan, sound attenuators, canvas collars, anti-vibration mounts and wiring to local isolator; ducting, transformation pieces, plenum boxes, stop ends, filter boxes, spigots, balancing dampers, flexibles, cross-talk sound attenuators, weather louvre and air-terminals; system complete and fully functional)	no	1	R	R
		FA-G.07	<b>Mechanical Fresh Air,</b> (Supply and installation of axial flow fan, sound attenuators, canvas collars, anti-vibration mounts and wiring to local isolator; ducting, transformation pieces, plenum boxes, stop ends, filter boxes, spigots, balancing dampers, flexibles, weather louvre and air-terminals; system complete and fully functional)	no	1	R	R

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		FA-G.08	<b>Mechanical Fresh Air,</b> (Supply and installation of axial flow fan, sound attenuators, canvas collars, anti-vibration mounts and wiring to local isolator; ducting, transformation pieces, plenum boxes, stop ends, filter boxes, spigots, balancing dampers, flexibles, weather louvre and air-terminals; system complete and fully functional)	no	1	R	R
		FA-G.09	<b>Mechanical Fresh Air,</b> (Supply and installation of axial flow fan, sound attenuators, canvas collars, anti-vibration mounts and wiring to local isolator; ducting, transformation pieces, plenum boxes, stop ends, filter boxes, spigots, balancing dampers, flexibles, weather louvre and air-terminals; system complete and fully functional)	no	1	R	R
		FA-G.10	<b>Mechanical Fresh Air,</b> (Supply and installation of axial flow fan, sound attenuators, canvas collars, anti-vibration mounts and wiring to local isolator; ducting, transformation pieces, plenum boxes, stop ends, filter boxes, spigots, balancing dampers, flexibles, weather louvre and air-terminals; system complete and fully functional)	no	1	R	R
		FA-G.11	<b>Mechanical Fresh Air,</b> (Supply and installation of axial flow fan, sound attenuators, canvas collars, anti-vibration mounts and wiring to local isolator; ducting, transformation pieces, plenum boxes, stop ends, filter boxes, spigots, balancing dampers, flexibles, weather louvre and air-terminals; system complete and fully functional)	no	1	R	R
		FA-G.12	<b>Mechanical Fresh Air,</b> (Supply and installation of axial flow fan, sound attenuators, canvas collars, anti-vibration mounts and wiring to local isolator; ducting, transformation pieces, plenum boxes, stop ends, filter boxes, spigots, balancing dampers, flexibles, weather louvre and air-terminals; system complete and fully functional)	no	1	R	R
		EA-G.01	<b>Mechanical Extract Air,</b> (Supply and installation of axial flow fan, sound attenuators, canvas collars, anti-vibration mounts and wiring to local isolator; ducting, transformation pieces, stop ends, spigots, flexibles, cowl, air-terminals and door grilles; system complete and fully functional)	no	1	R	R
		EA-G.02	<b>Mechanical Extract Air,</b> (Supply and installation of axial flow fan, sound attenuators, canvas collars, anti-vibration mounts and wiring to local isolator; ducting, transformation pieces, stop ends, spigots, flexibles, cowl, air-terminals and door grilles; system complete and fully functional)	no	1	R	R
		EA-G.04	<b>Mechanical Extract Air,</b> (Supply and installation of axial flow fan, sound attenuators, canvas collars, anti-vibration mounts and wiring to local isolator; ducting, transformation pieces, stop ends, spigots, flexibles, weather louvre, air-terminals and door grilles; system complete and fully functional)	no	1	R	R
		EA-G.05	<b>Mechanical Extract Air,</b> (Supply and installation of axial flow fan, sound attenuators, canvas collars, anti-vibration mounts and wiring to local isolator; ducting, transformation pieces, stop ends, spigots, flexibles, weather louvre, air-terminals and door grilles; system complete and fully functional)	no	1	R	R
		EA-G.06	<b>Mechanical Extract Air,</b> (Supply and installation of axial flow fan, sound attenuators, canvas collars, anti-vibration mounts and wiring to local isolator; ducting, transformation pieces, stop ends, spigots, flexibles, weather louvre, air-terminals and door grilles; system complete and fully functional)	no	1	R	R
		EA-G.07	<b>Mechanical Extract Air,</b> (Supply and installation of axial flow fan, sound attenuators, canvas collars, anti-vibration mounts and wiring to local isolator; ducting, transformation pieces, stop ends, spigots, flexibles, cowl, and air-terminals; system complete and fully functional)	no	1	R	R
		EA-G.08	<b>Mechanical Extract Air,</b> (Supply and installation of axial flow fan, sound attenuators, canvas collars, anti-vibration mounts and wiring to local isolator; ducting, transformation pieces, stop ends, spigots, flexibles, cowl, and air-terminals; system complete and fully functional)	no	1	R	R
		EA-G.09	<b>Mechanical Extract Air,</b> (Supply and installation of axial flow fan, sound attenuators, canvas collars, anti-vibration mounts and wiring to local isolator; ducting, transformation pieces, stop ends, spigots, flexibles, cowl, and air-terminals; system complete and fully functional)	no	1	R	R
	<b>RATES ONLY</b>		<b>Ducting</b> (Including supports and fixings) <u>Galvanised sheet metal ducting</u> GSM category 1 (< 750mm with semiperimeter <= 1150mm) GSM category 2 (< 750mm with semiperimeter >= 1150mm) GSM category 3 (from 750mm to 1350mm) GSM round ducting, Ø150mm GSM round ducting, Ø200mm GSM round ducting, Ø250mm GSM round ducting, Ø300mm GSM round ducting, Ø350mm  <u>Galvanised sheet metal ducting bends</u> GSM duct bend, category 1 GSM duct bend, category 2 GSM duct bend, category 3 GSM duct bend, Ø150mm GSM duct bend, Ø200mm GSM duct bend, Ø250mm GSM duct bend, Ø300mm GSM duct bend, Ø350mm  <u>Galvanised sheet metal ducting transformations &amp; offsets (Largest size)</u> GSM duct transformation, category 1 GSM duct transformation, category 2 GSM duct transformation, category 3 GSM duct transformation, Ø150mm GSM duct transformation, Ø200mm GSM duct transformation, Ø250mm GSM duct transformation, Ø300mm GSM duct transformation, Ø350mm	m m m m m m m m m m  no no no no no no no no no no  no no no no no no no no no	1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1	R R R R R R R R R R  R R R R R R R R R R  R R R R R R R R R	

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			Galvanised sheet metal ducting stop ends	no	1	R			
			GSM duct stop end, category 1	no	1	R			
			GSM duct stop end, category 2	no	1	R			
			GSM duct stop end, category 3	no	1	R			
			GSM duct stop end, Ø150mm	no	1	R			
			GSM duct stop end, Ø200mm	no	1	R			
			GSM duct stop end, Ø250mm	no	1	R			
			GSM duct stop end, Ø300mm	no	1	R			
			GSM duct stop end, Ø350mm	no	1	R			
			Galvanised sheet metal ducting spigots						
			GSM duct spigot, Ø100mm	no	1	R			
			GSM duct spigot, Ø150mm	no	1	R			
			GSM duct spigot, Ø200mm	no	1	R			
			GSM duct spigot, Ø250mm	no	1	R			
			GSM duct spigot, Ø300mm	no	1	R			
			GSM duct spigot, Ø350mm	no	1	R			
			Flexible Ducting <i>(Including supports and fixings)</i>						
			Acoustic flexible ducting (1500 mm long)						
			Acoustic flexible ducting, Ø100mm	no	1	R			
			Acoustic flexible ducting, Ø150mm	no	1	R			
			Acoustic flexible ducting, Ø200mm	no	1	R			
			Acoustic flexible ducting, Ø250mm	no	1	R			
			Acoustic flexible ducting, Ø300mm	no	1	R			
			Acoustic flexible ducting, Ø350mm	no	1	R			
			Canvas duct collars						
			Standard duct collars						
			Flexible canvas collars, category 1	no	1	R			
			Flexible canvas collars, category 2	no	1	R			
			Flexible canvas collars, category 3	no	1	R			
			Flexible canvas collars, Ø100mm	no	1	R			
			Flexible canvas collars, Ø150mm	no	1	R			
			Flexible canvas collars, Ø200mm	no	1	R			
			Flexible canvas collars, Ø250mm	no	1	R			
			Flexible canvas collars, Ø300mm	no	1	R			
			Flexible canvas collars, Ø350mm	no	1	R			
			Terminals <i>(constant volume)</i>						
			Diffusers						
			CRD round, Ø100mm	no	1	R			
			CRD round, Ø150mm	no	1	R			
			CRD round, Ø200mm	no	1	R			
			CRD round, Ø250mm	no	1	R			
			CRD square, Ø100mm	no	1	R			
			CRD square, Ø150mm	no	1	R			
			CRD square, Ø200mm	no	1	R			
			CRD square, Ø250mm	no	1	R			
			Krantz radial, Ø250mm	no	1	R			
			Krantz radial, Ø300mm	no	1	R			
			Grilles						
			400mm × 200mm c/w OBD	no	1	R			
			450mm × 250mm c/w OBD	no	1	R			
			500mm × 300mm c/w OBD	no	1	R			
			600mm × 300mm c/w OBD	no	1	R			
			Disc Valves						
			VLK/VLI, Ø100mm	no	1	R			
			VLK/VLI, Ø150mm	no	1	R			
			VLK/VLI, Ø200mm	no	1	R			
			Door Grilles						
			Non-vision type door grille, 450mm × 250mm						
4.3			Provisional Sum:	sum	1	R	-	R	-
4.4			Testing and commissioning	sum	1	R		R	
4.5			Scaffolding and Rigging	sum	1	R		R	
4.6			Operating and Maintenance Manuals	sum	1	R		R	
4.7			12 Month Maintenance & Guarantee	sum	1	R		R	
4.8			TOTAL EX VAT CARRIED TO BILL NO. 18 MECHANICAL INSTALLATION PART C1.2.8						