## 750 ml Parallel Synthesizer



Design pressure  100 bar  200 bar  350 bar  500°C  Material of Construction  SS316,Hastelloy, Monel, Nickel, Titanium, Zirconium etc.  Wessel ID  75 mm  Vessel ID  75 mm  Wessel ID  75 mm  Wessel ID  Removable head and vessel design  Head mounting style  Heading'  External electrical ceramic band heater with cladding & insulation.¹  Motor & drive  Magnetic drive coupling, (M-40, Torque Capacity: 40 kg-cm) Material of Bush-carbon filled PTFE (CFT)  Stirrer  2 Stage Solid Shaft with 6-bladed pitch blade turbine stirrer  External fittings  Pressure gauge with vacuum protection  Safety rupture disc (inconel) with vacuum protection  Safety rupture disc (inconel) with vacuum protection  Safety rupture disc (inconel) with vacuum protection  Helical Cooling coil  Thermowell (with RTD PTI00 temperature sensor)  Dip tube  Gasket  PTFE Gasket  Spiral wound Grafoil Gasket  Closure Type  Magnetic Drive Cooling System²  Auto Cooling System²  Auto-cooling system with water pump, for forced cooling SS tank & hose pipes for exothermic reaction & faster cooling.  SS Control Panel  Power Supply  10, 220VAC 50 Hz  Mounting  SS Trolley / SS Tabletop	Description	M4 or M6						
Design temperature  \$300°C  Material of Construction  Vessel ID  75 mm  Vessel ID  75 mm  Vessel internal height  Minimum Stirrable volume  Head mounting style  Removable head and vessel design  Heating'  External electrical ceramic band heater with cladding & insulation.'  Motor & drive  Shaft sealing  Magnetic drive coupling, (M-40, Torque Capacity: 40 kg-cm) Material of Bush- carbon filled PTFE (CFT)  Stirrer  2 Stage Solid Shaft with 6-bladed pitch blade turbine stirrer  External fittings  - Pressure gauge with vacuum protection - Safety rupture disc (inconel) with vacuum protection - Gas inlet-valve & liquid sampling valve mounted on common dip tube - Vent needle valves shall be ¼" NPT end connections  Internal fittings  - Helical Cooling coil - Thermowell (with RTD PTI00 temperature sensor) - Dip tube  Gasket  PTFE Gasket  Spiral wound Grafoil Gasket  Closure Type  Split clamp with clamp bolts  Magnetic Drive Cooling System²  Auto-cooling System²  Auto-cooling System²  Auto-cooling system with water pump, for forced cooling SS tank & hose pipes for exothermic reaction & faster cooling.  Control Panel  Power Supply  liq, 220VAC 50 Hz	Model	2213	2223	2233	2215	2225	2235	
Material of Construction  Vessel ID  75 mm  Vessel internal height  Minimum Stirrable volume  Head mounting style  Removable head and vessel design  Heating'  Starral electrical ceramic band heater with cladding & insulation.¹  Motor & drive  Magnetic drive coupling, (M-40, Torque Capacity: 40 kg-cm) Material of Bush-carbon filled PTFE (CFT)  Stirrer  2 Stage Solid Shaft with 6-bladed pitch blade turbine stirrer  External fittings  Pressure gauge with vacuum protection Safety rupture disc (inconel) with vacuum protection Safety rupture disc (inconel) with vacuum protection Stirer All ineedle valve & liquid sampling valve mounted on common dip tube Note: All needle valves shall be ¼" NPT end connections  Internal fittings  Helical Cooling coil Thermowell (with RTD PT100 temperature sensor) Dip tube  Gasket  PTFE Gasket  Spiral wound Grafoil Gasket  Closure Type  Split clamp with clamp bolts  Magnetic Drive Cooling System²  Auto Cooling lenel with, Programmable P.I.D temperature controller with high temperature alarm Programmable P.I.D temperature controller with high temperature alarm Variable frequency drive for motor speed control	Design pressure	100 bar	200 bar	350 bar	100 bar	200 bar	350 bar	
Construction  Vessel ID  Vessel internal height  Minimum Stirrable volume  Head mounting style  Removable head and vessel design  Heating'  External electrical ceramic band heater with cladding & insulation.¹  Motor & drive  % hp ex-proof gas group IIB motor (zone 1) with 100-1450 RPM  Shaft sealing  Magnetic drive coupling, (M-40, Torque Capacity: 40 kg-cm) Material of Bush- carbon filled PTFE (CFT)  Stirrer  2 Stage Solid Shaft with 6-bladed pitch blade turbine stirrer  External fittings  Pressure gauge with vacuum protection Safety rupture disc (inconel) with vacuum protection Safety rupture disc (inconel) with vacuum protection Gas inlet-valve & liquid sampling valve mounted on common dip tube Note: All needle valve Note: All needle valves shall be ¼" NPT end connections  Internal fittings  Helical Cooling coil Thermowell (with RTD PT100 temperature sensor) Dip tube  Gasket  PTFE Gasket  Spiral wound Grafoil Gasket  Closure Type  Split clamp with clamp bolts  Magnetic Drive Cooling System² Auto-cooling system with water pump, for circulating water to cool the magnetic drive  Auto-cooling system with water pump, for forced cooling SS tank & hose pipes for exothermic reaction & faster cooling.  Control Panel  SS Control panel with, Programmable P.I.D temperature controller with high temperature alarm Programmable P.I.D temperature controller with high temperature alarm Variable frequency drive for motor speed control	Design temperature		300°C			500°C		
Vessel internal height       193 mm         Minimum Stirrable volume       60 ml         Head mounting style       Removable head and vessel design         Heating¹       External electrical ceramic band heater with cladding & insulation.¹         Motor & drive       ¼ hp ex-proof gas group IIB motor (zone 1) with 100-1450 RPM         Shaft sealing       Magnetic drive coupling, (M-40, Torque Capacity: 40 kg-cm) Material of Bush- carbon filled PTFE (CFT)         Stirrer       2 Stage Solid Shaft with 6-bladed pitch blade turbine stirrer         External fittings       • Pressure gauge with vacuum protection • Safety rupture disc (Inconel) with vacuum protection • Gas inlet-valve & liquid sampling valve mounted on common dip tube • Vent needle valve Note: All needle valves shall be ¼" NPT end connections         Internal fittings       • Helical Cooling coil • Thermowell (with RTD PT100 temperature sensor) • Dip tube         Gasket       PTFE Gasket       Spiral wound Grafoil Gasket         Closure Type       Split clamp with clamp bolts         Magnetic Drive Cooling System²       Water Pump and 10Ltr. Tank with tubing for circulating water to cool the magnetic drive         Auto Cooling System²       Auto-cooling system with water pump, for forced cooling. St tank & hose pipes for exothermic reaction & faster cooling.         Control Panel       SS Control panel with, Programmable P.I.D temperature controller with high temperature alarm • Variable frequency drive for motor speed		SS316,Hastelloy, Monel, Nickel, Titanium, Zirconium etc.						
Minimum Stirrable volume  Head mounting style Removable head and vessel design  Heating' External electrical ceramic band heater with cladding & insulation.¹  Motor & drive ¼ hp ex-proof gas group IIB motor (zone 1) with 100-1450 RPM  Shaft sealing Magnetic drive coupling, (M-40, Torque Capacity: 40 kg-cm) Material of Bush- carbon filled PTFE (CFT)  Stirrer 2 Stage Solid Shaft with 6-bladed pitch blade turbine stirrer  External fittings Pressure gauge with vacuum protection Safety rupture disc (Inconel) with vacuum protection Gas inlet-valve & liquid sampling valve mounted on common dip tube Vent needle valve  Note: All needle valve shall be ¼" NPT end connections  Internal fittings Helical Cooling coil Thermowell (with RTD PT100 temperature sensor)  Dip tube  Gasket PTFE Gasket Spiral wound Grafoil Gasket  Closure Type Split clamp with clamp bolts  Magnetic Drive Cooling Water Pump and 10Ltr. Tank with tubing for circulating water to cool the magnetic drive  Auto Cooling System² Auto-cooling system with water pump, for forced cooling SS tank & hose pipes for exothermic reaction & faster cooling.  Control Panel SS Control panel with, Programmable P.I.D temperature controller with high temperature alarm Variable frequency drive for motor speed control	Vessel ID			75 mr	m			
Volume         Head mounting style       Removable head and vessel design         Heating¹       External electrical ceramic band heater with cladding & insulation.¹         Motor & drive       ½ hp ex-proof gas group IIB motor (zone 1) with 100-1450 RPM         Shaft sealing       Magnetic drive coupling, (M-40, Torque Capacity: 40 kg-cm) Material of Bush- carbon filled PTFE (CFT)         Stirrer       2 Stage Solid Shaft with 6-bladed pitch blade turbine stirrer         External fittings       • Pressure gauge with vacuum protection • Safety rupture disc (Incone) with vacuum protection • Gas inlet-valve & liquid sampling valve mounted on common dip tube • Vent needle valve shall be ½" NPT end connections         Internal fittings       • Helical Cooling coil • Thermowell (with RTD PTI00 temperature sensor) • Dip tube         Gasket       PTFE Gasket       Spiral wound Grafoil Gasket         Closure Type       Split clamp with clamp bolts         Magnetic Drive Cooling System²       Water Pump and 10Ltr. Tank with tubing for circulating water to cool the magnetic drive         Auto-cooling system with water pump, for forced cooling SS tank & hose pipes for exothermic reaction & faster cooling.         Control Panel       SS Control panel with, • Programmable P.I.D temperature controller with high temperature alarm • Variable frequency drive for motor speed control         Power Supply       Iqp, 220VAC 50 Hz	Vessel internal height	193 mm						
External electrical ceramic band heater with cladding & insulation.\footnote{1} Motor & drive		60 ml						
Motor & drive         ¼ hp ex-proof gas group IIB motor (zone 1) with 100-1450 RPM           Shaft sealing         Magnetic drive coupling, (M-40, Torque Capacity: 40 kg-cm) Material of Bush- carbon filled PTFE (CFT)           Stirrer         2 Stage Solid Shaft with 6-bladed pitch blade turbine stirrer           External fittings         • Pressure gauge with vacuum protection • Safety rupture disc (Inconel) with vacuum protection • Gas inlet-valve & liquid sampling valve mounted on common dip tube • Vent needle valve Note: All needle valves shall be ¼" NPT end connections           Internal fittings         • Helical Cooling coil • Thermowell (with RTD PTI00 temperature sensor) • Dip tube           Gasket         PTFE Gasket         Spiral wound Grafoil Gasket           Closure Type         Split clamp with clamp bolts           Magnetic Drive Cooling System²         Water Pump and 10Ltr. Tank with tubing for circulating water to cool the magnetic drive           Auto Cooling System²         Auto-cooling system with water pump, for forced cooling SS tank & hose pipes for exothermic reaction & faster cooling.           Control Panel         SS Control panel with, • Programmable P.I.D temperature controller with high temperature alarm • Variable frequency drive for motor speed control           Power Supply         1φ, 220VAC 50 Hz	Head mounting style	Removable head and vessel design						
Shaft sealing  Magnetic drive coupling, (M-40, Torque Capacity: 40 kg-cm) Material of Bush- carbon filled PTFE (CFT)  Stirrer  2 Stage Solid Shaft with 6-bladed pitch blade turbine stirrer  External fittings  Pressure gauge with vacuum protection Safety rupture disc (Inconel) with vacuum protection Gas inlet-valve & liquid sampling valve mounted on common dip tube Vent needle valves shall be ¼" NPT end connections  Internal fittings  Helical Cooling coil Thermowell (with RTD PT100 temperature sensor) Dip tube  Gasket  PTFE Gasket Spiral wound Grafoil Gasket  Closure Type Split clamp with clamp bolts  Magnetic Drive Cooling System² Water Pump and 10Ltr. Tank with tubing for circulating water to cool the magnetic drive  Auto Cooling System² Auto-cooling system with water pump, for forced cooling SS tank & hose pipes for exothermic reaction & faster cooling.  Control Panel  SS Control panel with, Programmable P.I.D temperature controller with high temperature alarm Variable frequency drive for motor speed control	Heating <sup>1</sup>	External electrical ceramic band heater with cladding & insulation.1						
Stirrer  2 Stage Solid Shaft with 6-bladed pitch blade turbine stirrer  External fittings  • Pressure gauge with vacuum protection • Safety rupture disc (Inconel) with vacuum protection • Gas inlet-valve & liquid sampling valve mounted on common dip tube • Vent needle valve Note: All needle valves shall be ¼" NPT end connections  Internal fittings  • Helical Cooling coil • Thermowell (with RTD PT100 temperature sensor) • Dip tube  Gasket  PTFE Gasket  Spiral wound Grafoil Gasket  Closure Type  Split clamp with clamp bolts  Magnetic Drive Cooling System²  Auto-cooling system with water pump, for circulating water to cool the magnetic drive  Auto-cooling system with water pump, for forced cooling SS tank & hose pipes for exothermic reaction & faster cooling.  Control Panel  SS Control panel with, • Programmable P.I.D temperature controller with high temperature alarm • Variable frequency drive for motor speed control  Power Supply  10, 220VAC 50 Hz	Motor & drive	¼ hp ex-proof gas group IIB motor (zone 1) with 100-1450 RPM						
External fittings  Pressure gauge with vacuum protection Safety rupture disc (Inconel) with vacuum protection Gas inlet-valve & liquid sampling valve mounted on common dip tube Hote: All needle valves shall be ½" NPT end connections  Internal fittings  Helical Cooling coil Thermowell (with RTD PT100 temperature sensor) Dip tube  Gasket  PTFE Gasket Spiral wound Grafoil Gasket  Closure Type Split clamp with clamp bolts  Magnetic Drive Cooling System² Water Pump and 10Ltr. Tank with tubing for circulating water to cool the magnetic drive  Auto-cooling system with water pump, for forced cooling SS tank & hose pipes for exothermic reaction & faster cooling.  Control Panel  SS Control panel with, Programmable P.I.D temperature controller with high temperature alarm Variable frequency drive for motor speed control	Shaft sealing	Magnetic drive coupling, (M-40, Torque Capacity: 40 kg-cm) Material of Bush- carbon filled PTFE (CFT)						
<ul> <li>Safety rupture disc (Inconel) with vacuum protection</li> <li>Gas inlet-valve &amp; liquid sampling valve mounted on common dip tube</li> <li>Vent needle valve</li> <li>Note: All needle valves shall be ¼" NPT end connections</li> </ul> Internal fittings <ul> <li>Helical Cooling coil</li> <li>Thermowell (with RTD PT100 temperature sensor)</li> <li>Dip tube</li> </ul> Gasket <ul> <li>PTFE Gasket</li> <li>Spiral wound Grafoil Gasket</li> </ul> Closure Type <ul> <li>Split clamp with clamp bolts</li> </ul> Magnetic Drive Cooling <ul> <li>Water Pump and 10Ltr. Tank with tubing for circulating water to cool the magnetic drive</li> </ul> Auto Cooling System² <ul> <li>Auto-cooling system with water pump, for forced cooling SS tank &amp; hose pipes for exothermic reaction &amp; faster cooling.</li> </ul> Control Panel <ul> <li>SS Control panel with,</li> <li>Programmable P.I.D temperature controller with high temperature alarm</li> <li>Variable frequency drive for motor speed control</li> </ul> Power Supply <ul> <li>1φ, 220VAC 50 Hz</li> </ul>	Stirrer	2 Stage Solid Shaft with 6-bladed pitch blade turbine stirrer						
<ul> <li>Thermowell (with RTD PT100 temperature sensor)</li> <li>Dip tube</li> <li>Gasket</li> <li>PTFE Gasket</li> <li>Spiral wound Grafoil Gasket</li> <li>Closure Type</li> <li>Split clamp with clamp bolts</li> <li>Magnetic Drive Cooling System²</li> <li>Auto Cooling System²</li> <li>Auto-cooling system with water pump, for forced cooling SS tank &amp; hose pipes for exothermic reaction &amp; faster cooling.</li> <li>Control Panel</li> <li>SS Control panel with,         <ul> <li>Programmable P.I.D temperature controller with high temperature alarm</li> <li>Variable frequency drive for motor speed control</li> </ul> </li> <li>Power Supply</li> </ul>	External fittings	<ul> <li>Safety rupture disc (Inconel) with vacuum protection</li> <li>Gas inlet-valve &amp; liquid sampling valve mounted on common dip tube</li> <li>Vent needle valve</li> </ul>						
Closure Type  Split clamp with clamp bolts  Magnetic Drive Cooling System²  Auto Cooling System²  Auto-cooling system with water pump, for forced cooling SS tank & hose pipes for exothermic reaction & faster cooling.  Control Panel  SS Control panel with,  • Programmable P.I.D temperature controller with high temperature alarm  • Variable frequency drive for motor speed control  Power Supply  1φ, 220VAC 50 Hz	Internal fittings	Thermowell (with RTD PT100 temperature sensor)						
Magnetic Drive Cooling System²       Water Pump and 10Ltr. Tank with tubing for circulating water to cool the magnetic drive         Auto Cooling System²       Auto-cooling system with water pump, for forced cooling SS tank & hose pipes for exothermic reaction & faster cooling.         Control Panel       SS Control panel with, <ul> <li>Programmable P.I.D temperature controller with high temperature alarm</li> <li>Variable frequency drive for motor speed control</li> </ul> Power Supply     1φ, 220VAC 50 Hz	Gasket	PTFE Gasket Spiral wound Grafoil Gask				asket		
System² magnetic drive  Auto Cooling System² Auto-cooling system with water pump, for forced cooling SS tank & hose pipes for exothermic reaction & faster cooling.  Control Panel SS Control panel with,  • Programmable P.I.D temperature controller with high temperature alarm  • Variable frequency drive for motor speed control  Power Supply 1φ, 220VAC 50 Hz	Closure Type	Split clamp with clamp bolts						
hose pipes for exothermic reaction & faster cooling.  Control Panel  SS Control panel with,  • Programmable P.I.D temperature controller with high temperature alarm  • Variable frequency drive for motor speed control  Power Supply  1φ, 220VAC 50 Hz		•						
<ul> <li>Programmable P.I.D temperature controller with high temperature alarm</li> <li>Variable frequency drive for motor speed control</li> <li>Power Supply</li> </ul>	Auto Cooling System <sup>2</sup>							
	Control Panel	Programmable P.I.D temperature controller with high temperature alarm						
Mounting SS Trolley / SS Tabletop	Power Supply	1φ, 220VAC 50 Hz						
	Mounting	SS Trolley / SS Tabletop						

## Note:

- 1- Cascade temperature controller shall be provided for 500  $^{\circ}\text{C}$
- 2 Only for trolley model systems

## **Enquiry guide for customized 500 ml models**



IN5 NK2 TI2 ZR7 ZR7 **TNL** 

SCC BVP **FBV BFL** 

**TSP** 

TL

DAC

PED ASU **ASA** ECE

USC

sions (W x D x H)

Enquiry code model is Standard Model no-A-B-C-D1-D2-E-F-H-I-J where A, B, C, D1, D2, E, F, H, I, J options can be selected from the below tables. The below options will be in place of standard supply.

A Material of Construction						
SS 316 L 316				lt	nconel 625	
Hastelloy C276 HC6				Ν	lickel 200	
Hastelloy C 22	HC2			Т	itanium Gr. 2	
Hastelloy B	НВ			Z	irconium 702	
Monel 400	MN4			Т	antalum	
Inconel 600	IN6			Т	antalum lined	
B Head Mounting Style				F	Valves & Fittings**	
Fixed head with manual vessel raising		K	Serpentine cooling coil			
lowering		VT		Ball valve powder inlet ( ¼ ")		
Fixed head with manual vessel raising lowering tilting		KT		Flush bottom valve ( 10 mm)		
Fixed head with pneumatic vessel raising lowering		Р		Baffles ( with serpentine cooling coil)		
Fixed head with pneumatic vessel raising		PT		н	Control Panel	
lowering & tilting				Touch	Screen - HMI panel	
C Heating Style				I	Mounting & Overall Dimension	
Electrical Ex-Proof, IIB + H <sub>2</sub> certified		EA		SS Trol	lley	
Welded SS 304 jacket with insulation		JS		J	Certifications***	
DI RPM				Desiar	n approval as per ASME code by	
Up to 3000 rpm		RT		notified body		
Gear box up to 440 rpm		R4		CE-PED 2014 / 68 / EU		
D2 Motor Type				ASME	U stamp coded	
¼ hp Ex-Proof gas group IIC (Zone 1)		XC		ATEX C	certified reactor 2014 / 34 / EU	
1/2 hp Ex-Proof CE ATEX certified II 2G Ex de IIC		ΑZ		CE mo	arked panel & electrical parts	
т4 '				UL / C	SA marked panel & electrical par	

V٢	nt.	ρ.	

group A, B, C, D

100 rpm)

- Customer is advised to select best suited options for most optimized price & delivery.
- 1) 2) 3) All above options may not be available / possible with all models.
- Customization of volume, material, pressure, temperature etc. may be possible on request
- Different power supply options may be possible on request.

¼ hp Ex-Proof CE ATEX certified Class 1 Div 2

Hollow shaft with gas induction impeller

Spiral (No cooling coil, max 100 rpm)

Anchor ( with serpentine cooling coil, max

**Stirrer Options\*** 

Overall dimensions are indicative, they may change depending on the optional accessories or specific design modifications opted.

CD

SH

SA

SS

\*Stirrer options can be in place of standard or additional multiple interchangeable. \*\*\*Country specific certification like CRN for Canada, AS1210 for Australia & DOSH for Malaysia can be offered on request