

3<sup>rd</sup> List

**COMPARATIVE STATEMENT / TECHNICAL PROPOSALS FOR 552(110489) NEW NAME (1086) PROCUREMENT OF EQUIPMENT /  
MACHINERY, FURNITURE & LIBRARY BOOKS FOR GPIS IN KHYBER PAKHTUNKHWA  
DATE OF TENDER OPENING 09-06-2021(Process Instrumentation Lab)**

Item No.	Name of Items	Electrical Engineering Services, Lahore.							Anmol Scientific Corporation, Lahore							Al-Waqas Associates, Lahore										
		C.S		P.C		P.L.P		T	Model	C.S		P.C		P.L.P		T	Model	C.S		P.C		P.L.P		T	Model	
		40	5	5	2	4	4	60		40	5	5	2	4	4	60		40	5	5	2	4	4	60		
1.	<b>Glass Filled Thermometer</b> a) 0-100c b) 0-150c c) 0-250c d) 0-360c e) 50-350c f) -50-150c	0	0	0	0	0	0	0	Not Quoted	40	-	5	-	4	4	53	China	40	-	5	-	-	4	4	49	China
2.	<b>Bimetallic Thermometer</b> Technical Specification Dial size 150 mm. Accuracy + 1% of F.S.D. Stem of connection metals AISI 316 SS Immersion Length Adjustable between 75 mm to 300 mm. Enclosure Cast aluminum stove enameled Black with weather-proof as per IP 150 mm dial sizes	0	0	0	0	0	0	0	Not Quoted	40	-	5	-	4	4	53	China	38	-	5	-	-	4	4	47	China
	Pressed AISI 304 sself colour finish with weather-proof as per IP 150 mm dial sizes Sensor Bimetallic strip Stem Diameter 6 mm / 8 mm Connection 1/2" BSP (M) / NPT (M) Mounting Horizontal (Co-axial) Vertical Entry Back /Bottom Standard range °C (-) 30 to 300. Window Sheet glass or safety glass Pointer Zero adjustable pointer	0	0	0	0	0	0	0	Not Quoted																	
3.	<b>Resistance Thermometer</b> <b>Temperature range</b> -200 °C to	0	0	0	0	0	0	0	Not Quoted	40	-	5	-	4	4	53	China	0	0	0	0	0	0	0	0	Not Quoted

1. Engr. Fazli Saeed, \_\_\_\_\_  
Lecturer (Chemical) GCT, Peshawar

2. Engr. Iatizaz Hassan, \_\_\_\_\_  
Lecturer (Petroleum) GPI, Karak

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Item No.	Name of Items	Electrical Engineering Services, Lahore.							Anmol Scientific Corporation, Lahore							Al-Waqas Associates, Lahore										
		C.S		P.C		P.L.P		T	Model	C.S		P.C		P.L.P		T	Model	C.S		P.C		P.L.P		T	Model	
		40	5	5	2	4	4	60		40	5	5	2	4	4	60		40	5	5	2	4	4	60		
	670 °C <b>Nominal resistance at 0.01 °C</b> 100 ± 0.5 <b>Temperature coefficient</b> 0.0039250 ± / °C <b>Sensor length</b> 30 mm ± 5 mm (1.2 in ± 0.2 in) <b>Sensor location</b> 3 mm ± 1 mm from tip (0.1 in ± 0.1 in) <b>Sheath dimensions, length x diameter</b> 12 in x 0.25 in <b>Sheath material</b> INCONEL® 600 <b>Transition junction temperature range</b> [4] -50 °C to 200 °C <b>Transition junction Dimensions</b> 71 mm x 12.5 mm (2.8 in x 0.49 in) <b>Minimum immersion length</b> [5] (< 5 mK error) 5609: 100 mm (3.9 in) <b>Maximum immersion Length</b> 305 mm (12 in) <b>Response time</b> [5] 12 seconds typical <b>Self heating (in 0 °C bath)</b> 5609: 50 mW/°C <b>Lead-wire cable type</b> Teflon,™ 24 AWG <b>Lead-wire length</b> 1.8 m (6 ft) <b>Lead-wire temperature range</b> -50 °C to 250 °C																									
4.	<b>Thermocouple Model 5650 Type S</b> (Pt10%Rh/Pt) <b>Range</b> 0°C to 1450°C For high accuracy 0°C to 1100°C <b>Long term stability (depending on usage)</b> Up to 1450°C ± 2°C	0	0	0	0	0	0	0	Not Quoted	40	-	5	-	4	4	53	ASC-PP-3505 Pak	0	0	0	0	0	0	0	0	Not Quoted

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		40	5	5	2	4	4	60		40	5	5	2	4	4	60		40	5	5	2	4	4	60		
	<b>Short term stability</b> Up to 1450°C ± 0.6°C <b>Accuracy (uncalibrated, special tolerance)<sup>†</sup></b> Up to 1450°C ± 0.1% of reading <b>Protection sheath</b> Material Alumina (99.8% pure Al <sub>2</sub> O <sub>3</sub> ) <b>Diameter</b> 0.25 inch (6.35 mm) <b>Length</b> 20 inch (508 mm) or 25 inch (635 mm) <b>Cold junction sheath</b> Material Stainless steel <b>Diameter</b> 0.188 inch (4.8 mm) <b>Length</b> 8.25 inch (210 mm) <b>Copper leads to readout</b> Material Teflon-insulated, low EMF solid copper Length 70.4 inch (1788 mm) <b>Immersion</b> At least 6 inchs recommend																									
5.	<b>BourdenGauge (Diaphragm)</b> Technical Specification <b>ACCURACY</b> ± 2.5% of F.S.D. ± 2% of F.S.D & ± 1.5% of F.S.D <b>DIAL SIZE</b> 150 mm <b>WINDOW</b> Perspex <b>SENSING ELEMENT</b> Diaphragm <b>DIAPHRAGM MATERIAL</b> AISI 316 SS <b>MOVEMENT MATERIAL</b> AISI 304 SS <b>DIAPHRAGM CHAMBER MATERIAL</b> AISI 316 SS <b>MAX. STATIC PRESSURE</b> 60 g/cm <sup>2</sup> /100kg/cm <sup>2</sup> (Optional) <b>ENCLOSURE</b> Die-cast aluminium weather proof stove enameled black standard AISI 304 SS weather proof self colour finish <b>CONNECTION SIZE MOUNTING &amp; ENTRY</b> ¼" NPT (F) for LP & HP Direct with bottom entry Flush ponel with	0	0	0	0	0	0	0	Not Quoted	40	-	5	-	4	4	53	ASC-PP-3506 Pak	0	0	0	0	0	0	0	0	Not Quoted
	¼" NPT (F) for LP & HP Direct with bottom entry Flush ponel with																									

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		C.S		P.C		P.L.P		T	Model	C.S		P.C		P.L.P		T	Model	C.S		P.C		P.L.P		T	Model	
		40	5	5	2	4	4	60		40	5	5	2	4	4	60		40	5	5	2	4	4	60		
	bottom entry 2" OD pipe mounting with bottom entry <b>STANDARD FITMENT</b> Over range relief valve <b>STANDARD RANGES</b> 0-1250, m.m WC 0-1, 4 kg/cm <sup>2</sup> <b>CONNECTION</b> 1/2" BSP, 1/2" NPT& M20 x 1.5 mm Standard Flange as per BS.ASA & Din.Standard - Optional SEALED UNIT ( Optional ) <b>CONSTRUCTION</b> Diaphragm welded with top chamber <b>DIAPHRAGM PROTECTION</b> Teflon coating (Optional) <b>TOP CHAMBER</b> AISI 304 SS <b>BOTTOM CHAMBER AND CONNECTION MATERIAL</b> AISI 316 SS – Standard Teflon coating - Optional																									
6.	<b>Vacuum Gauge</b> <b>Vacuum gauge head</b> Cable length of vacuum gauge head 2m <b>Upper measuring limit</b> 1 x 10 <sup>3</sup> / 7.5 x 10 <sup>2</sup> mbar/hPa / torr <b>Lower measuring limit</b> 1 x 10 <sup>-3</sup> / 1 x 10 <sup>-3</sup> mbar/hPa / torr <b>Measurement principle</b> Thermal conductivity acc. to Pirani (chem. resist. plastics/ceramics ) <b>Vacuum connection</b> Small flange KF DN 16 and hose nozzle DN 6/10 mm <b>Material of outer housing</b> Robust plastic housing (PP) with good chemical resistance <b>Dimensions of display unit</b> (L x W x H) 138 x 124 x 115 mm Rated mains voltage / mains frequency / Plug	0	0	0	0	0	0	0	Not Quoted	40	-	5	-	4	4	53	ASC-PP-3507 Pak	0	0	0	0	0	0	0	0	Not Quoted

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		40	5	5	2	4	4	60		40	5	5	2	4	4	60		40	5	5	2	4	4	60	
	230 V / 50-60 Hz / CEE/CH/UK/US/AUS																								
7.	<b>BourdenGauge</b> Dial size 50 mm Accuracy ±1% of Range Span Sensing Element Capsule Capsule Material AISI 316 SS Movement Maters AISI 304 SS <b>Enclosure</b> Cast Aluminum weather proof stove enameled black AISI 304 SS weather proof self colour finish <b>Mounting</b> Direct with bottom entry <b>Direct Panel</b> <b>Panel Mounting</b> back entry (cut out = 167 mm) <b>Capsule Chamber</b> Cast aluminum stove enameled black <b>Connection Material</b> AISI 316 SS <b>Connection Size</b> ½" BSP (M) ½" NPT (M). M 20 x 1.5 or Equivalent <b>Range</b> 0 to 10000 mm Wc	0	0	0	0	0	0	0	Not Quoted	40	-	5	-	4	4	53	ASC-PP-3508 Pak	0	0	0	0	0	0	0	Not Quoted
8.	<b>Barometer</b> Tube Length 1000mm Mercury Pan	0	0	0	0	0	0	0	Not Quoted	40	-	5	-	4	4	53	ASC-PP-3509 Pak	0	0	0	0	0	0	0	Not Quoted
9.	<b>Pitot Tube</b>	40	-	5	-	4	4	53	FM-1849-12 EES-Pak	40	-	5	-	4	4	53	ASC-PP-3510 Pak	0	0	0	0	0	0	0	Not Quoted
	<u>Experimental Capabilities:</u> • Static and Dynamic pressure measurement • Determination of velocity profile in a tube flow • Pitot static tube complete with scale for positioning within the tube																								

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		40	5	5	2	4	4	60		40	5	5	2	4	4	60		40	5	5	2	4	4	60	
	<ul style="list-style-type: none"> <li>Pipe section made of transparent acrylic</li> <li>Manometer <ul style="list-style-type: none"> <li>Hose Coupling</li> </ul> </li> </ul> Compatible with hydraulic bench.																								
10.	<b>Venturimeter</b> <ul style="list-style-type: none"> <li>Transparent acrylic.</li> <li>Manometer range 0 to 290/300mm.</li> <li>No. of transparent manometer tubes 8 to 11.</li> <li>Throat diameter: 10-12 mm.</li> </ul> Complete with: manometer tubes; manifold with air bleed valve; base plate with foot screws; plastic outlet tube; flow regulator valve; and instruction manual.	40	-	5	-	4	4	53	FMH-149-19 EES-Pak	40	-	5	-	4	4	53	ASC-PP-3511 Pak	0	0	0	0	0	0	0	Not Quoted
11.	<b>Digital Manometer</b> <b>Pressure measurement range</b> 0 ... 14 bar / 1400 kPa / 203 psi <b>Pressure connection</b> G1/4" male thread Temperature sensor Pt1000 class 1/3 B acc. to DIN EN <b>Temperature measurement range</b> 0 ... +200 °C / +32 ... +392 °F Power internal for OBA, OFA & RBOT manometer: 3.6 V Lithium battery, type SL-760 for REID manometer: coin cell, type CR 2430 external 5 ... 28 V / ≈ 3 mA <b>Digital interface</b> RS485 (converter for RS232 and USB available), bus-compatible Error in pressure measurement <b>Total error band</b> 0 ... 50 °C 0.1 % <b>Stability</b> approx. 0.2 % / year <b>Display</b> LCD, 4½ digit <b>Resolution</b> 1 mbar / 0.1 °C <b>Operating temperature</b> 0 ... +50 °C / +32 ... +122 °F	0	0	0	0	0	0	0	Not Quoted	40	-	5	-	4	4	53	ASC-PP-3512 Pak	0	0	0	0	0	0	0	Not Quoted

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		40	5	5	2	4	4	60		40	5	5	2	4	4	60		40	5	5	2	4	4	60		
	<b>Rear electrical connections</b> digital interface & external feeding 5-pole socket Pt1000 (not for RBOT) 4-pole socket Sample Wetted Materials Stainless Steel 1.4435 or similar (AISI 316L), FPM sealing <b>Dimensions</b> 75 mm x D 45 mm																									
12.	<b>Digital Tachometer</b> <ul style="list-style-type: none"> <li>• 5 Digits LCD display</li> <li>• Light reflex measurement</li> <li>• Range from 10.00 to 99,999 RPM</li> <li>• Measuring distance 50 to 300mm</li> <li>• Event counter elapsed time</li> <li>• Max/Min hold: true average</li> <li>• Auto range RPM</li> <li>• Suitable Optical measurement &amp; contact measurement               <ul style="list-style-type: none"> <li>• Event counter (0 ~99,999)</li> <li>• RS-232 interface (RM-1501)</li> <li>• Contact RPM and circumferential velocity measurement in one simple adaptor (optional RM-1502)</li> </ul> </li> </ul> <u>General specification:</u> <b>Battery</b> Four 1.5V battery (AA, UM3) <b>Time base</b> 4.000MHz quartz crystal <b>Operating temperature</b> 0 °C ~50 °C (32 °F ~122 °F) <b>Reflective light</b> Red LED <b>Size</b> 608 (L) × 2.5 (W) × 1.4(H) 175mm (L) ×65mm (W) ×36mm (H) <b>Accessories</b> Carrying case × 1, reflective tape × 1 Instruction manual × 1 (Software & RS-232 cable for RM-1501) Option Contact adaptor (Optional RM-	40	1	5	-	-	4	50	TM-4100D Taiwan	40	-	5	-	4	4	53	ASC-PP-3513 Pak	0	0	0	0	0	0	0	0	Not Quoted

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		40	5	5	2	4	4	60		40	5	5	2	4	4	60		40	5	5	2	4	4	60		
13.	<b>Orifice Plate</b> For 1 inch Dia. pipe <b>a)Concentric Orifice</b> With flanges <b>b)Eccentric Orifice</b> With flanges <b>c)Segmental Orifice</b> With flanges	0	0	0	0	0	0	0	Not Quoted	40	-	5	-	4	4	53	ASC-PP-3514 Pak	0	0	0	0	0	0	0	0	Not Quoted
14.	<b>Sight Glass Level Indicator</b> <b>Visible Length SL:ME</b>	0	0	0	0	0	0	0	Not Quoted	40	-	5	-	-	4	49	ASC-PP-3515 Pak	0	0	0	0	0	0	0	0	Not Quoted
	<b>Body:</b> 40 x 40, 40 (for special materials) Connection gauge valve - body: union Gauge valve types: <b>Actuation:</b> hand wheel Material glass plates acc. to DIN 7081: Borosilicate Material media wetted parts: Depending on delivery situation material can vary. Types with special materials e. g. Hastelloy, Monel etc. are available.																									

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		40	5	5	2	4	4	60		40	5	5	2	4	4	60		40	5	5	2	4	4	60		
15.	<b>Rotameter</b> <b>Measurable flow rates</b> - Water (20 °C) : 0.002 l/h bis 110 l/h - Air (20 °C ; 1 bar abs.): 0.1 l/h bis 3 500 l/h <b>metering tube</b> : 20:1 <b>Max. Temperature</b> - Fitting material SS : 100 °C - With option /MV : 130 °C (not for PP-Rotameter) - <b>Fitting material</b> PP : 80 °C Max. Pressure : 16 bar <b>Material process connection</b> - Inner thread : PP or 1.4581 (for option controller 1.4571) - <b>Cutting ring</b> : 1.4571 or steel - Nozzle : 1.4571 or steel (PTFE) - <b>Swageloc connection</b> : 1.4571 Material of fitting : Polypropylen; 1.4581 Material of gaskets : PE / Buna <b>Length approx.</b> : 325 mm	0	0	0	0	0	0	0	Not Quoted	40	-	5	-	4	4	53	ASC-PP-3516 Pak	0	0	0	0	0	0	0	0	Not Quoted
16.	<b>Magnetic Level Indicator</b> Float base level measuring and indicating instrument.	0	0	0	0	0	0	0	Not Quoted	40	-	5	-	4	4	53	ASC-PP-3517 Pak	0	0	0	0	0	0	0	0	Not Quoted
17.	<b>Conductivity Meter</b> Basic multi-parameter analyser for pH, mV, conductivity, Salinity, TDS and temperature 1 pH/mV channel 1 conductivity channel 1 temperature channel A high resolution graphic screen with white backlight shows measurements and temperature. Full guidance is given by simple instructions on the display in the language of your choice (English, Dutch, French, German). Storage memory for 300 measurements. Shows a	0	0	0	0	0	0	0	Not Quoted	40	-	5	-	4	4	53	ASC-PP-3518 Pak	40	-	5	-	4	4	53	Bantee-530 China	

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		40	5	5	2	4	4	60		40	5	5	2	4	4	60		40	5	5	2	4	4	60			
	GLP report on the screen. Three year warranty Robust dust and splash-proof cabinet. Operates on the mains (120/230 VAC) or 9...15 VDC. Optional 12 V car adaptor permits these laboratory meters to work in a car. Specifications pH: 0...14 pH mV: 1000 mV Conductivity: 0...1000 mS/cm Salinity: 0...70 ppt TDS: 0...100 g/l Temperature: 0...100C Resolution: 0.01 pH, 1 mV, 0.01S/cm, 1C																										
18.	<b>Resistivity Meter</b>	40	-	5	-	4	4	53	D2L-88 China	40	-	5	-	4	4	53	ASC-PP-3519 Pak	0	0	0	0	0	0	0	0	0	Not Quoted
	Resistivity Meter is a portable measuring instrument designed to give a quick, reliable measurement of the resistivity from a small sample, expressed in Ohm-Meters. This transistorized meter accurately measures the resistivity of fluids, slurries, and semi-solids with resistivities from 0.2 to 100 Ohm-Meters. <b>Power supply</b> AC220V±10% ; 50±1 Hz <b>Working environment temperature</b> 10-50C <b>Measuring range</b> 0.2-100Ω·m <b>Measuring temperature range</b> 10-50C with precision range in ±1C																										
19.	<b>Temperature Control Trainer</b>	40	-	5	-	4	4	53	IT- 4797AEES,p ak	40	-	5	-	4	4	53	ASC-PP-3520 Pak	0	0	0	0	0	0	0	0	0	Not Quoted
20.	<b>PH Control Trainer</b>	40	-	5	-	4	4	53	IT-4793A EES,Pak	40	-	5	-	4	4	53	ASC-PP-3521 Pak	0	0	0	0	0	0	0	0	0	Not Quoted
21.	<b>Level Control Trainer</b>	40	-	5	-	4	4	53	IT-4795A EES,Pak	40	-	5	-	4	4	53	ASC-PP-3522 Pak	0	0	0	0	0	0	0	0	0	Not Quoted

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		40	5	5	2	4	4	60		40	5	5	2	4	4	60		40	5	5	2	4	4	60		
22.	Flow Control Trainer	40	-	5	-	4	4	53	IT-4796A pak	40	-	5	-	4	4	53	ASC-PP-3523 Pak	0	0	0	0	0	0	0	0	Not Quoted
23.	Pneumatic Control Trainer	40	-	5	-	-	4	49	IT-150BP pak	40	-	5	-	4	4	53	ASC-PP-3524 Pak	0	0	0	0	0	0	0	0	Not Quoted
24.	Cut Section of Pneumatic Control Valve	40	-	5	-	-	4	49	Local	40	-	5	-	4	4	53	ASC-PP-3525 Pak	0	0	0	0	0	0	0	0	Not Quoted

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		C.S		P.C		P.L.P		T	
		40	5	5	2	4	4	60	
1.	<b>Glass Filled Thermometer</b> a) 0-100c b) 0-150c c) 0-250c d) 0-360c e) 50-350c f) -50-150c	0	0	0	0	0	0	0	Not Quoted
2.	<b>Bimetallic Thermometer</b> Technical Specification Dial size 150 mm. Accuracy + 1% of F.S.D. Stem of connection metals AISI 316 SS Immersion Length Adjustable between 75 mm to 300 mm. Enclosure Cast aluminum stove enameled Black with weather-proof as per IP 150 mm dial sizes	0	0	0	0	0	0	0	Not Quoted
	Pressed AISI 304 sself colour finish with weather-proof as per IP 150 mm dial sizes Sensor Bimetallic strip Stem Diameter 6 mm / 8 mm Connection ½" BSP (M) / NPT (M) Mounting Horizontal (Co-axial) Vertical Entry Back /Bottom Standard range °C (-) 30 to 300. Window Sheet glass or safety glass Pointer Zero adjustable pointer	0	0	0	0	0	0	0	Not Quoted
3.	<b>Resistance Thermometer</b> <b>Temperature range</b> -200 °C to 670 °C <b>Nominal resistance at 0.01 °C</b> 100 ± 0.5 <b>Temperature coefficient</b> 0.0039250 ± 0.00001 /°C <b>Sensor length</b> 30 mm ± 5 mm (1.2 in ± 0.2 in)	0	0	0	0	0	0	0	Not Quoted

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3<sup>rd</sup> List

Item No.	Name of Items	ESOLS MULTAN							Model
		C.S		P.C		P.L.P		T	
		40	5	5	2	4	4	60	
	<b>Sensor location</b> 3 mm ± 1 mm from tip (0.1 in ± 0.1 in) <b>Sheath dimensions,</b> <b>length x diameter</b> 12 in x 0.25 in <b>Sheath material</b> INCONEL® 600 <b>Transition junction</b> <b>temperature range[4]</b> -50 °C to 200 °C <b>Transition junction</b> <b>Dimensions</b> 71 mm x 12.5 mm (2.8 in x 0.49 in) <b>Minimum immersion</b> <b>length[5] (&lt; 5 mK error)</b> 5609: 100 mm (3.9 in) <b>Maximum immersion</b> <b>Length</b> 305 mm (12 in) <b>Response time[5]</b> 12 seconds typical <b>Self heating (in 0 °C bath)</b> 5609: 50 mW/°C <b>Lead-wire cable type</b> Teflon,™ 24 AWG <b>Lead-wire length</b> 1.8 m (6 ft) <b>Lead-wire temperature range</b> -50 °C to 250 °C								
4.	<b>Thermocouple</b> <b>Model 5650 Type S</b> (Pt10%Rh/Pt) <b>Range</b> 0°C to 1450°C For high accuracy 0°C to 1100°C <b>Long term stability (depending on usage)</b> Up to 1450°C ± 2°C <b>Short term stability</b> Up to 1450°C ± 0.6°C <b>Accuracy (uncalibrated, special tolerance)†</b> Up to 1450°C ± 0.1% of reading <b>Protection sheath</b> Material Alumina (99.8% pure Al <sub>2</sub> O <sub>3</sub> ) <b>Diameter</b> 0.25 inch (6.35 mm) <b>Length</b> 20 inch (508 mm) or 25 inch (635 mm) <b>Cold junction sheath</b> Material Stainless steel <b>Diameter</b> 0.188 inch (4.8 mm) <b>Length</b> 8.25 inch (210 mm) <b>Copper leads to readout</b> Material Teflon-insulated, low EMF solid copper Length 70.4 inch (1788 mm) <b>Immersion</b> At least 6 inches recommend	0	0	0	0	0	0	0	Not Quoted

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		C.S		P.C		P.L.P		T	
		40	5	5	2	4	4	60	
5.	<b>BourdenGauge (Diaphragm)</b> Technical Specification <b>ACCURACY</b> ± 2.5% of F.S.D. ± 2% of F.S.D & ± 1.5% of F.S.D <b>DIAL SIZE</b> 150 mm <b>WINDOW</b> Perspex <b>SENSING ELEMENT</b> Diaphragm <b>DIAPHRAGM MATERIAL</b> AISI 316 SS <b>MOVEMENT MATERIAL</b> AISI 304 SS <b>DIAPHRAGM CHAMBER MATERIAL</b> AISI 316 SS <b>MAX. STATIC PRESSURE</b> 60 g/cm <sup>2</sup> /100kg/cm <sup>2</sup> (Optional) <b>ENCLOSURE</b> Die-cast aluminium weather proof stove enameled black standard AISI 304 SS weather proof self colour finish <b>CONNECTION SIZE MOUNTING &amp; ENTRY</b>	0	0	0	0	0	0	0	Not Quoted
	¼" NPT (F) for LP & HP Direct with bottom entry Flush panel with bottom entry 2" OD pipe mounting with bottom entry <b>STANDARD FITMENT</b> Over range relief valve <b>STANDARD RANGES</b> 0-1250, m.m WC 0-1, 4 kg/cm <sup>2</sup> <b>CONNECTION</b> ½" BSP, ½" NPT& M20 x 1.5 mm Standard Flange as per BS.ASA &Din.Standard - Optional SEALED UNIT ( Optional ) <b>CONSTRUCTION</b> Diaphragm welded with top chamber <b>DIAPHRAGM PROTECTION</b> Teflon coating (Optional) <b>TOP CHAMBER</b> AISI 304 SS <b>BOTTOM CHAMBER AND CONNECTION MATERIAL</b> AISI 316 SS – Standard Teflon coating - Optional	0	0	0	0	0	0	0	Not Quoted
6.	<b>Vacuum Guage</b> <b>Vacuum gauge head</b> Cable length of vacuum gauge head 2m <b>Upper measuring limit</b> 1 x 10 <sup>3</sup> / 7.5 x 10 <sup>2</sup> mbar/hPa / torr <b>Lower measuring limit</b> 1 x 10 <sup>-3</sup> / 1 x 10 <sup>-3</sup> mbar/hPa / torr <b>Measurement principle</b> Thermal conductivity acc. to Pirani (chem. resist. plastics/ceramics )	0	0	0	0	0	0	0	Not Quoted

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		C.S		P.C		P.L.P		T	
		40	5	5	2	4	4	60	
	<b>Vacuum connection</b> Small flange KF DN 16 and hose nozzle DN 6/10 mm <b>Material of outer housing</b> Robust plastic housing (PP) with good chemical resistance <b>Dimensions of display unit (L x W x H)</b> 138 x 124 x 115 mm Rated mains voltage / mains frequency / Plug 230 V / 50-60 Hz / CEE/CH/UK/US/AUS								
7.	<b>BourdenGuage</b> <b>Dial size</b> 50 mm <b>Accuracy</b> ±1% of Range Span <b>Sensing Element</b> Capsule <b>Capsule Material</b> AISI 316 SS <b>Movement Maters</b> AISI 304 SS <b>Enclosure</b> Cast Aluminum weather proof stove enameled black AISI 304 SS weather proof self colour finish <b>Mounting</b> Direct with bottom entry <b>Direct Panel</b> <b>Panel Mounting</b> back entry (cut out = 167 mm) <b>Capsule Chamber</b> Cast aluminum stove enameled black <b>Connection Material</b> AISI 316 SS <b>Connection Size</b> 1/2" BSP (M) 1/2" NPT (M). M 20 x 1.5 or Equivalent <b>Range</b> 0 to 10000 mm Wc	0	0	0	0	0	0	0	Not Quoted
8.	<b>Barometer</b> Tube Length 1000mm Mercury Pan	0	0	0	0	0	0	0	Not Quoted

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Item No.	Name of Items	ESOLS MULTAN							Model
		C.S		P.C		P.L.P		T	
		40	5	5	2	4	4	60	
9.	<b>Pitot Tube</b> <u>Experimental Capabilities:</u> <ul style="list-style-type: none"> <li>• Static and Dynamic pressure measurement</li> <li>• Determination of velocity profile in a tube flow</li> <li>• Pitot static tube complete with scale for positioning within the tube</li> <li>• Pipe section made of transparent acrylic</li> <li>• Manometer <ul style="list-style-type: none"> <li>▪ Hose Coupling</li> </ul> </li> </ul> Compatible with hydraulic bench.	0	0	0	0	0	0	0	Not Quoted
10.	<b>Venturimeter</b> <ul style="list-style-type: none"> <li>• Transparent acrylic.</li> <li>• Manometer range 0 to 290/300mm.</li> <li>• No. of transparent manometer tubes 8 to 11.</li> <li>• Throat diameter: 10-12 mm.</li> </ul> Complete with: manometer tubes; manifold with air bleed valve; base plate with foot screws; plastic outlet tube; flow regulator valve; and instruction manual.	0	0	0	0	0	0	0	Not Quoted
11.	<b>Digital Manometer</b> <b>Pressure measurement range</b> 0 ... 14 bar / 1400 kPa / 203 psi <b>Pressure connection</b> G1/4" male thread Temperature sensor Pt1000 class 1/3 B acc. to DIN EN <b>Temperature measurement range</b> 0 ... +200 °C / +32 ... +392 °F Power internal for OBA, OFA & RBOT manometer: 3.6 V Lithium battery, type SL-760 for REID manometer: coin cell, type CR 2430 external 5 ... 28 V / ≈ 3 mA <b>Digital interface</b> RS485 (converter for RS232 and USB available), bus-compatible Error in pressure measurement <b>Total error band</b> 0 ... 50 °C 0.1 % <b>Stability</b> approx. 0.2 % / year <b>Display</b> LCD, 4½ digit <b>Resolution</b> 1 mbar / 0.1 °C <b>Operating temperature</b> 0 ... +50 °C / +32 ... +122 °F <b>Rear electrical connections</b> digital interface & external feeding 5-pole socket Pt1000 (not for RBOT) 4-pole socket Sample Wetted Materials Stainless Steel 1.4435 or similar (AISI 316L), FPM sealing	0	0	0	0	0	0	0	Not Quoted

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		C.S		P.C		P.L.P		T	
		40	5	5	2	4	4	60	
	<b>Dimensions</b> 75 mm x D 45 mm								
12.	<b>Digital Tachometer</b> <ul style="list-style-type: none"> <li>• 5 Digits LCD display</li> <li>• Light reflex measurement</li> <li>• Range from 10.00 to 99,999 RPM</li> <li>• Measuring distance 50 to 300mm</li> <li>• Event counter elapsed time</li> <li>• Max/Min hold: true average</li> <li>• Auto range RPM</li> <li>• Suitable Optical measurement &amp; contact measurement</li> <li>• Event counter (0 ~99,999)</li> <li>• RS-232 interface (RM-1501)</li> <li>• Contact RPM and circumferential velocity measurement in one simple adaptor (optional RM-1502)</li> </ul> <u>General specification:</u> <b>Battery</b> Four 1.5V battery (AA, UM3) <b>Time base</b> 4.000MHz quartz crystal <b>Operating temperature</b> 0 °C ~50 °C (32 °F ~122 °F) <b>Reflective light</b> Red LED <b>Size</b> 608 (L) × 2.5 (W) × 1.4(H) 175mm (L) × 65mm (W) × 36mm (H) <b>Accessories</b> Carrying case × 1, reflective tape × 1 Instruction manual × 1 (Software & RS-232 cable for RM-1501) Option Contact adaptor (Optional RM-	0	0	0	0	0	0	0	Not Quoted
13.	<b>Orifice Plate</b> For 1 inch Dia. pipe <b>a) Concentric Orifice</b> With flanges <b>b) Eccentric Orifice</b> With flanges <b>c) Segmental Orifice</b> With flanges	0	0	0	0	0	0	0	Not Quoted
14.	<b>Sight Glass Level Indicator</b> <b>Visible Length</b> SL:ME <b>Body:</b> 40 x 40, 40 (for special materials) Connection gauge valve - body: union Gauge valve types:	0	0	0	0	0	0	0	Not Quoted

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		C.S		P.C		P.L.P		T	
		40	5	5	2	4	4	60	
	<b>Actuation:</b> hand wheel Material glass plates acc. to DIN 7081: Borosilicate Material media wetted parts: Depending on delivery situation material can vary. Types with special materials e. g. Hastelloy, Monel etc. are available.								
15.	<b>Rotameter</b> <b>Measurable flow rates</b> - Water (20 °C) : 0.002 l/h bis 110 l/h - Air (20 °C ; 1 bar abs.): 0.1 l/h bis 3 500 l/h <b>metering tube</b> : 20:1 <b>Max. Temperature</b> - Fitting material SS : 100 °C - With option /MV : 130 °C (not for PP-Rotameter) - <b>Fitting material</b> PP : 80 °C Max. Pressure : 16 bar <b>Material process connection</b> - Inner thread : PP or 1.4581 (for option controller 1.4571) - <b>Cutting ring</b> : 1.4571 or steel - Nozzle : 1.4571 or steel (PTFE) - <b>Swageloc connection</b> : 1.4571 Material of fitting : Polypropylen; 1.4581 Material of gaskets : PE / Buna <b>Length approx.</b> : 325 mm	0	0	0	0	0	0	0	Not Quoted
16.	<b>Magnetic Level Indicator</b> Float base level measuring and indicating instrument.	0	0	0	0	0	0	0	Not Quoted
17.	<b>Conductivity Meter</b> Basic multi-parameter analyser for pH, mV, conductivity, Salinity, TDS and temperature 1 pH/mV channel 1 conductivity channel 1 temperature channel A high resolution graphic screen with white backlight shows measurements and temperature. Full guidance is given by simple instructions on the display in the language of your choice (English, Dutch, French, German). Storage memory for 300 measurements. Shows a GLP report on the screen. Three year warranty Robust dust and splash-proof cabinet. Operates on the mains (120/230 VAC) or 9...15 VDC. Optional 12 V car adaptor permits these laboratory meters to work in a car. Specifications pH: 0...14 pH mV: 1000 mV Conductivity: 0...1000 mS/cm Salinity: 0...70 ppt TDS: 0...100 g/l Temperature: 0...100C Resolution: 0.01 pH, 1 mV, 0.01S/cm, 1C	0	0	0	0	0	0	0	Not Quoted

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		C.S		P.C		P.L.P		T	
		40	5	5	2	4	4	60	
18.	<b>Resistivity Meter</b>	0	0	0	0	0	0	0	Not Quoted
	Resistivity Meter is a portable measuring instrument designed to give a quick, reliable measurement of the resistivity from a small sample, expressed in Ohm-Meters. This transistorized meter accurately measures the resistivity of fluids, slurries, and semi-solids with resistivities from 0.2 to 100 Ohm-Meters. <b>Power supply</b> AC220V±10% ; 50±1 Hz <b>Working environment temperature</b> 10-50C <b>Measuring range</b> 0.2-100Ω·m <b>Measuring temperature range</b> 10-50C with precision range in ±1C	0	0	0	0	0	0	0	Not Quoted
19.	<b>Temperature Control Trainer</b>	40	0	5	0	4	4	53	<b>SMT-IC-12A</b>
20.	<b>PH Control Trainer</b>	40	0	5	0	4	4	53	<b>SMT-9205</b>
21.	<b>Level Control Trainer</b>	40	0	5	0	4	4	53	<b>SMT-IC-14A</b>
22.	<b>Flow Control Trainer</b>	40	0	5	0	4	4	53	<b>SMT-IC-13A</b>
23.	<b>Pneumatic Control Trainer</b>	40	0	5	0	4	4	53	<b>SMT-9206</b>
24.	<b>Cut Section of Pneumatic Control Valve</b>	40	0	5	0	4	4	53	<b>SMT-103-09</b>

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