



## Artisan Technology Group is your source for quality new and certified-used/pre-owned equipment

- FAST SHIPPING AND DELIVERY
- TENS OF THOUSANDS OF IN-STOCK ITEMS
- EQUIPMENT DEMOS
- HUNDREDS OF MANUFACTURERS SUPPORTED
- LEASING/MONTHLY RENTALS
- ITAR CERTIFIED SECURE ASSET SOLUTIONS

### SERVICE CENTER REPAIRS

Experienced engineers and technicians on staff at our full-service, in-house repair center

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### WE BUY USED EQUIPMENT

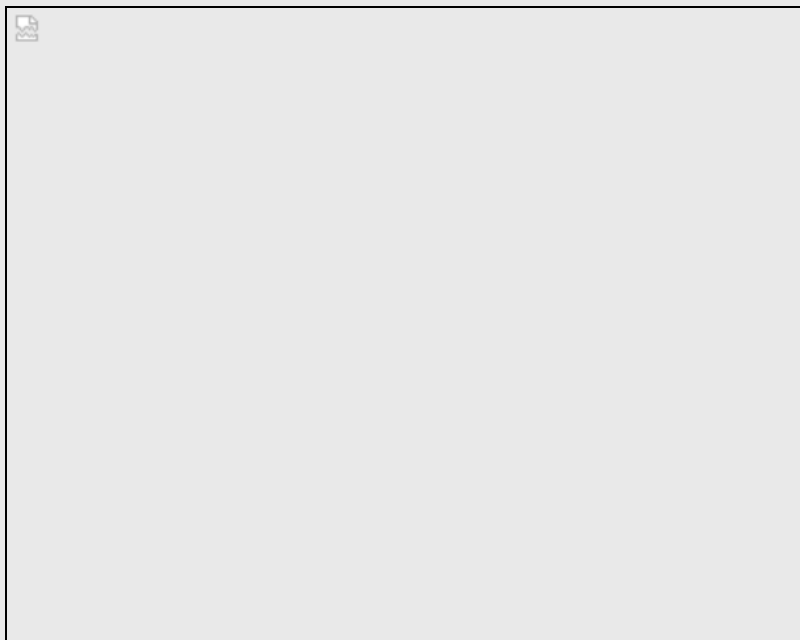
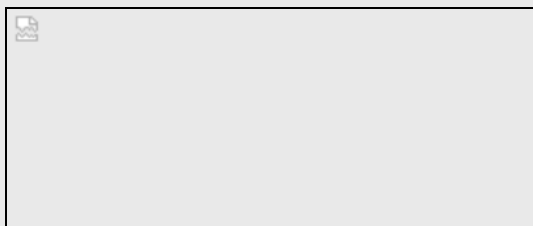
Sell your excess, underutilized, and idle used equipment. We also offer credit for buy-backs and trade-ins. [www.artisanng.com/WeBuyEquipment](http://www.artisanng.com/WeBuyEquipment) ↗

### LOOKING FOR MORE INFORMATION?

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**Contact us:** (888) 88-SOURCE | [sales@artisanng.com](mailto:sales@artisanng.com) | [www.artisanng.com](http://www.artisanng.com)

**THERMOVAC TM 20 / TM 21 / TM 22 / TM 23**



Dimensional drawing and panel cut-out for the THERMOVAC TM 20 (top) and TM 21/TM 22/TM 23 (bottom)

Technical Data		TM 20	TM 21	TM 22	TM 23
Measurement channels		1	1	2	3
Display range	mbar (Torr)	10 <sup>-3</sup> to 1000 (10 <sup>-3</sup> to 750)		5 x 10 <sup>-4</sup> to 1000 (3.75 x 10 <sup>-4</sup> to 750)	
Unit of measurement (selectable)		mbar, Torr, Pa, Micron			
Display		Digital, 7 segment LCD,		Digital, 7 segment-LCD, analog, LCD bar graph	
(TM 21/22 back-lit)		Analog, LCD bar graph		with logarithmic divisions (selectable)	
Type of gas (selectable)				Air, N2, Ar	
Measurement uncertainty with THERMOVAC sensors (after warming up)		< 20 % of the meas. value in the range 10 <sup>-3</sup> to 10 <sup>-2</sup> mbar, <15 % v. of the meas. value in the range 10 <sup>-2</sup> to 102 mbar			
Switching thresholds		–		2 floating changeover contacts per measurement channel	
Operating mode		–		single, interval	
Adjustment range for the switching thresholds	mbar (Torr)	–		5 x 10 <sup>-3</sup> to 500 (3.75 x 10 <sup>-3</sup> to 375)	
Hysteresis for the switching relay		–		standard 10 % of trigger value, free adjustable	
Ready relay		–		Contact closed when ready	
Rating of the relay contacts		–		AC 240 V/5 A (resistive load),	
				DC 60 V/0.7 A (resistive load)	
Contact life at 5 A		–		> 6 x 10 <sup>4</sup> cycles	

Chart recorder output (Ra > 2.5 kW)		0 to 10 V, logarithmic divisions: 1.67 V/decade	0 to 10 V, selectable: logarithmic/linear; logarithmic divisions: 1.67 V/decade, linearly adjustable over 3 decades; 0 V corresponds to 10-3 mbar, 10.5 V for faults		
Main connection 50/60 Hz (selectable)	V	90 to 130 / 180 to 250	100/120/200/230, +10/-15 %		
Power consumption	VA	9	12	14	
Storage temperature range	°C	-40 to +60			
Nominal temperature range	°C	0 to 40			
Max. rel. humidity	% n.c.	80			
Weight, approx.	kg (lbs)	2 (4.4)			
Dimensions (W x H x D)	mm	106.5 x 128.5 x 172	106.5 x 128.5 x 282		
Cable length, max.	m	5	100 with cable length alignment		
			(automatic cable length alignment for sensors TR 211/TR 212 and 216)		
Interface		–	RS 232 C	–	
Sensors		TR 211, TR 212, TR 216			
<b>Ordering Informatio</b>		<b>TM 20</b>	<b>TM 21</b>	<b>TM 22</b>	<b>TM 23</b>
Complete measurement system, with 2 m long main cord, TR 211 sensor and 5 m long sensor cable, 230 V AC		<b>Cat. No. 157 81</b>	–	–	–
Euro model, with 2 m long main cord, mbar readout, 230 V AC		–	<b>Cat. No. 157 83</b>	<b>Cat. No. 157 84</b>	<b>Cat. No. 157 98</b>
DKD calibration		<b>Cat. No. 157 12</b>			
<b>Options</b>					
19" installation frame		<b>Cat. No. 161 00</b>			
1/4 19" blank panel		<b>Cat. No. 161 02</b>			
<b>THERMOVAC sensors</b>					
TR 211, DN 16 KF		<b>Included with the instrument</b>	<b>Cat. No. 157 85</b>		
Replacement sensing cell for TR 211, DN 16 KF			<b>Cat. No. 157 75</b>		
TR 211, 1/8" NPT			<b>Cat. No. 896 33</b>		
Replacement sensing cell for TR 211, 1/8" NPT			<b>Cat. No. 896 34</b>		
TR 212, DN 16 KF			<b>Cat. No. 158 52</b>		
TR 212, DN 16 CF			<b>Cat. No. 158 86</b>		
Replacement sensing cell for TR 212, DN 16 KF			<b>Cat. No. 157 53</b>		
TR 216, DN 16 KF			<b>Cat. No. 157 87</b>		
Replacement sensing cell for TR 216, DN 16 KF			<b>Cat. No. 157 77</b>		
<b>Sensor cables</b>					
05 m		<b>Included with the instrument</b>	<b>Cat. No. 162 26</b>		
10 m		–	<b>Cat. No. 162 27</b>		
20 m		–	<b>Cat. No. 162 28</b>		
Longer cable runs (max. 100 m)		<b>upon request</b>	<b>upon request</b>		
Extension cable 20 m		–	<b>Cat. No. 160 77</b>		



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