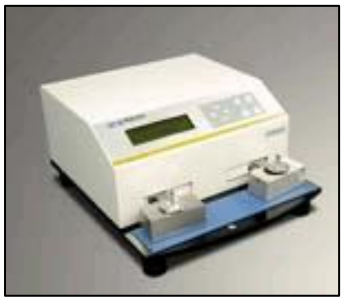
TRANSIENT DENSITY ANALYZER

Semi-active suspension/pulse electromagnetic technology **MICROCONTROLLER BASED**

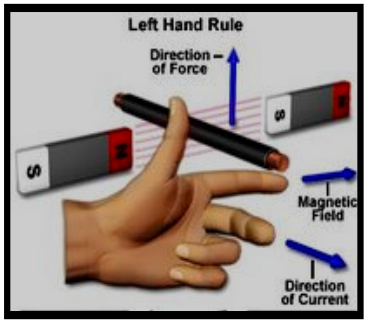
Introduction: MTSA range of Pulse base ultra-precision density analyzers machine is available in 10 different regular models apart from customized solutions to offer fine resolution measurement upto 100 nano- kgf/mm providing solution to measure liquid/gaseous density relating to all industrial and research applications . These machines are used in mettallurgy, heavy electrical engineering industries, defence, process control, sugar, milk, chemical, fuel, environment, thermal , acoustic petro-chemicals industrial electronics, railways, bio-chemical, medicine, Polymer composites ,avionics and many research and development activities.

Operating Principle: These ultra-precision transient density analyzers are working on Fleming principle of electromagnetic force, where a current (I) carrying conductor of length (L) experience force (F) when placed in a magnetic field (B). The buoyant/other Density dependent differential forces ,(gaseous/liquid) is counter balanced by such feed back controlled Fleming force and converted into equivalent display. These measurement systems are at-large immune to any climatically, mechanical, tribological, rheological, chemical constraints and displays very consistently with high level of accuracy.



MTSA-000021

MTSA-020005



WORKING PRINCIPLE

Models & Technical data of Ultra Precision density analyzers:

Density: up to 200.000mili-gf/c.c.

Model	Max. Capacity Mili-gf/cc^3	min-density measurement/ Tare density (mili.gf/cc^3) or ption	Step-down ration U=1,K=2/min-density count Subject to resolution	Incremental resolution above min density X Capacity (3-option)	Accuracy count restricted to resolution	Resolution Quantified- by count/optional	Pulse/D.C./Pulse Frequency
MTSA-0000021	00.002	01.0x10^{-6} /1.0x10$^{-5\ to\ -4}$	1:4000000/1000	10x10^{-7}/10x10^{-8} /10x10^{-9}	001	1/2/5/optional	Option
MTSA-0000022	00.002	02.0x10^{-6} /1.0x10$^{-5\ to\ -4}$	1:4000000/1000	20x10^{-7}/20x10^{-8} /20x10^{-9}	002	1/2/5/optional	Option
MTSA-0000025	00.002	05.0x10^{-6} /1.0x10$^{-5\ to\ -4}$	1:4000000/1000	50x10^{-7}/10x50^{-8} /50x10^{-9}	005	1/2/5/optional	Option
MTSA-0000201	00.020	10.0x10^{-6} /1.0x10$^{-5\ to\ -4}$	1:4000000/1000	10x10^{-7}/10x10^{-8} /10x10^{-9}	001	1/2/5/optional	Option
MTSA-0000202	00.020	20.0x10^{-6} /1.0x10$^{-5\ to\ -4}$	1:4000000/1000	20x10^{-7}/20x10^{-8} /20x10^{-9}	002	1/2/5/optional	Option
MTSA-0000205	00.020	50.0x10^{-6} /1.0x10$^{-5\ to\ -4}$	1:4000000/1000	50x10^{-7}/50x10^{-8} /50x10^{-9}	005	1/2/5/optional	Option
MTSA-0001001	00.100	10.0x10^{-6} /1.0x10$^{-5\ to\ -4}$	1:4000000/1000	10x10^{-7}/10x10^{-8} /10x10^{-9}	001	1/2/5/optional	Option
MTSA-0001002	00.100	20.0x10^{-6} /1.0x10$^{-5\ to\ -4}$	1:4000000/1000	20x10^{-7}/20x10^{-8} /20x10^{-9}	002	1/2/5/optional	Option
MTSA-0001005	00.100	50.0x10^{-6} /1.0x10$^{-5\ to\ -4}$	1:4000000/1000	50x10^{-7}/10x50^{-8} /50x10^{-9}	005	1/2/5/optional	Option
MTSA-0005001	0005.0	10.0x10^{-5} /1.0x10$^{-4\ to\ -3}$	1:4000000/1000	10x10^{-7}/10x10^{-8} /10x10^{-9}	002	1/2/5/optional	Option
MTSA-0005002	0005.0	20.0x10^{-5} /1.0x10$^{-4\ to\ -3}$	1:4000000/1000	20x10^{-7}/20x10^{-8} /20x10^{-9}	005	1/2/5/optional	Option
MTSA-0005005	0005.0	50.0x10^{-5} /1.0x10$^{-4\ to\ -3}$	1:4000000/1000	50x10^{-7}/50x10^{-8} /50x10^{-9}	005	1/2/5/optional	Option
MTSA-0100001	00010.0	10.0x10^{-4} /1.0x10$^{-3\ to\ -2}$	1:4000000/1000	10x10^{-7}/10x10^{-8} /10x10^{-9}	001	1/2/5/optional	Option
MTSA-0100002	00010.0	20.0x10^{-4} /1.0x10$^{-3\ to\ -2}$	1:4000000/1000	20x10^{-7}/20x10^{-8} /20x10^{-9}	002	1/2/5/optional	Option
MTSA-0100005	00010.0	50.0x10^{-4} /1.0x10$^{-3\ to\ -2}$	1:4000000/1000	50x10^{-7}/10x50^{-8} /50x10^{-9}	005	1/2/5/optional	Option
MTSA-0200001	00020.0	10.0x10^{-4} /1.0x10$^{-3\ to\ -2}$	1:4000000/1000	10x10^{-7}/10x10^{-8} /10x10^{-9}	001	1/2/5/optional	Option
MTSA-0200002	00020.0	20.0x10^{-4} /1.0x10$^{-3\ to\ -2}$	1:4000000/1000	20x10^{-7}/20x10^{-8} /20x10^{-9}	002	1/2/5/optional	Option
MTSA-0200005	00020.0	50.0x10^{-4} /1.0x10$^{-3\ to\ -2}$	1:4000000/1000	50x10^{-7}/10x50^{-8} /50x10^{-9}	005	1/2/5/optional	Option
MTSA-0500001	00050.0	10.0x10^{-4} /1.0x10$^{-3\ to\ -2}$	1:4000000/1000	10x10^{-7}/10x10^{-8} /10x10^{-9}	001	1/2/5/optional	Option
MTSA-0500002	00050.0	20.0x10^{-4} /1.0x10$^{-3\ to\ -2}$	1:4000000/1000	20x10^{-7}/20x10^{-8} /20x10^{-9}	002	1/2/5/optional	Option
MTSA-0500005	00050.0	50.0x10^{-4} /1.0x10$^{-3\ to\ -2}$	1:4000000/1000	50x10^{-7}/10x50^{-8} /50x10^{-9}	005	1/2/5/optional	Option
MTSA-01000001	00100.0	10.0x10^{-3} /1.0x10$^{-3\ to\ -2}$	1:4000000/1000	10x10^{-7}/10x10^{-8} /10x10^{-9}	001	1/2/5/optional	Option
MTSA-01000002	00100.0	20.0x10^{-3} /1.0x10$^{-3\ to\ -2}$	1:4000000/1000	20x10^{-7}/20x10^{-8} /20x10^{-9}	002	1/2/5/optional	Option
MTSA-02000005	00200.0	50.0x10^{-3} /1.0x10$^{-3\ to\ -2}$	1:4000000/2000	50x10^{-7}/10x50^{-8} /50x10^{-9}	001/002/005	1/2/5/optional	Option

Company provides dedicated solution meeting specific requirement.

General electrical/mechanical specifications:

Operating voltage: 12 volts D.C. /220 Volts A.C./option
Max density range: **2.0 m.g./cc ,20 m.g./cc ,200 m.g./cc ,2.0gms/c.c./cc,5.0 gms/c.c./cc,10.0 gms/c.c./cc,20.0 gms/c.c./cc,50.0 gms/c.c./cc,100.0gms/c.c./cc,200.0gms/c.c./cc**
Eccentric load deviation: 25 times the least count
Linearlity:0.1/0.2/0.3% of F.S.
Null voltage:0. 5/1/1.5% of F.S.V.
Position offset/Gain: programmable
Operating Temperature range: 60/100/200 Degree cel
Temperature coefficients of measurement: 10x10^{-6} ppm/degree cel
Power consumption: 5.0 V.A [max]
Accuracy: 0.5/1.0/2.0 % reading
Repeatability: **deviation of +/- 1.3 average count over 30 minute for 25 degree variation temperature over amb**
Resolution: 1.0 nano/micro gram/c.c. or as in data sheet
Accuracy: restricted to least count
Standard deviation: 2nd
Differential Standard deviation: SQRT (8 x (10–14) g ·R_nt)
Step down range: 1:10,00,00
Stabilization time: 3-10 sec
Temperature range/Rh: 0-70 degree cel/0-80%
Range: four range (programmable
Control: control against three different set point
Interface: RS-232/0-5 volt D.C/ proportional to density
Pan size/weight: Size: 213 x 342 x 90 mm/8.4 x 13.5 x 3.54 inch (pan size: 190 x 204 mm / 7.4 x 8.0 in)

NOTES: The Four numeral after product code indicates the (displacement in m.m.), and last digit corresponds AC/DC excitation (1-A.C., 2-D.C., 3-PULSE)

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Semi-active suspension/pulse electromagnetic technology **MICROCONTROLLER BASED**

Models & Technical data of precision-density analyzers machine: **Density: up to 200.000 gf/c.c.**

Model	Max. capacity gms/c.c.	min-weight measurement/ Tare weight (gms/c.c.) or option	Step-down ration U=1,K=2/min-weight count Subject to resolution	Incremental resolution above min weight X Capacity (3-option)	Accuracy count restricted to resolution level	Resolution Quantified- by count/optional	Pulse/D.C./Pulse Frequency
MTDA-000201	0020.0	$10.0x10^{-4}$ /$1.0x10^{-3}$	1:1000000/1000	$10x10^{-7}$/$10x10^{-8}$ /$10x10^{-9}$	002	1/2/5/optional	Option
MTDA-000202	0020.0	$20.0x10^{-4}$ /$1.0x10^{-3}$	1:1000000/1000	$20x10^{-7}$/$20x10^{-8}$ /$20x10^{-9}$	005	1/2/5/optional	Option
MTDA-000205	0020.0	$50.0x10^{-4}$ /$1.0x10^{-3}$	1:1000000/1000	$50x10^{-7}$/$10x50^{-8}$ /$50x10^{-9}$	002	1/2/5/optional	Option
MTDA-000501	0050.0	$10.0x10^{-4}$ /$1.0x10^{-3}$	1:1000000/1000	$10x10^{-7}$/$10x10^{-8}$ /$10x10^{-9}$	002	1/2/5/optional	Option
MTDA-000502	0050.0	$20.0x10^{-4}$ /$1.0x10^{-3}$	1:1000000/1000	$20x10^{-7}$/$20x10^{-8}$ /$20x10^{-9}$	005	1/2/5/optional	Option
MTDA-000505	0050.0	$50.0x10^{-4}$ /$1.0x10^{-3}$	1:1000000/1000	$10x10^{-7}$/$10x10^{-8}$ /$10x10^{-9}$	002	1/2/5/optional	Option
MTDA-001001	0100.0	$10.0x10^{-4}$/$1.0x10^{-3}$	1:1000000/1000	$20x10^{-7}$/$20x10^{-8}$ /$20x10^{-9}$	001	1/2/5/optional	Option
MTDA-001002	0100.0	$20.0x10^{-4}$ /$1.0x10^{-3}$	1:1000000/1000	$50x10^{-7}$/$10x50^{-8}$ /$50x10^{-9}$	002	1/2/5/optional	Option
MTDA-001005	0100.0	$50.0x10^{-4}$ /$1.0x10^{-3}$	1:1000000/1000	$10x10^{-7}$/$10x10^{-8}$ /$10x10^{-9}$	005	1/2/5/optional	Option
MTDA-002001	0200.0	$01.0x10^{-3}$ /$1.0x10^{-3}$	1:1000000/1000	$20x10^{-7}$/$20x10^{-8}$ /$20x10^{-9}$	002	1/2/5/optional	Option
MTDA-002002	0200.0	$02.0x10^{-3}$ /$1.0x10^{-3}$	1:1000000/1000	$10x10^{-7}$/$10x10^{-8}$ /$10x10^{-9}$	005	1/2/5/optional	Option
MTDA-002005	0200.0	$05.0x10^{-3}$ /$1.0x10^{-3}$	1:1000000/1000	$20x10^{-7}$/$20x10^{-8}$ /$20x10^{-9}$	001	1/2/5/optional	Option
MTDA-005001	0500.0	$10.0x10^{-3}$ /$1.0x10^{-3}$	1:1000000/1000	$50x10^{-7}$/$10x50^{-8}$ /$50x10^{-9}$	002	1/2/5/optional	Option
MTDA-005002	0500.0	$20.0x10^{-3}$ /$1.0x10^{-3}$	1:1000000/1000	$10x10^{-7}$/$10x10^{-8}$ /$10x10^{-9}$	005	1/2/5/optional	Option
MTDA-005005	0500.0	$50.0x10^{-3}$ /$1.0x10^{-3}$	1:1000000/1000	$20x10^{-7}$/$20x10^{-8}$ /$20x10^{-9}$	001	1/2/5/optional	Option
MTDA-010001	1000.0	$10.0x10^{-3}$ /$1.0x10^{-3}$	1:1000000/1000	$50x10^{-7}$/$10x50^{-8}$ /$50x10^{-9}$	002	1/2/5/optional	Option
MTDA-010002	1000.0	$20.0x10^{-3}$ /$1.0x10^{-3}$	1:1000000/1000	$10x10^{-7}$/$10x10^{-8}$ /$10x10^{-9}$	005	1/2/5/optional	Option
MTDA-010005	1000.0	$50.0x10^{-3}$ /$1.0x10^{-3}$	1:1000000/1000	$20x10^{-7}$/$20x10^{-8}$ /$20x10^{-9}$	001	1/2/5/optional	Option
MTDA-020001	2000.0	$10.0x10^{-3}$ /$1.0x10^{-3}$	1:1000000/1000	$50x10^{-7}$/$10x50^{-8}$ /$50x10^{-9}$	002	1/2/5/optional	Option
MTDA-020002	2000.0	$20.0x10^{-3}$ /$1.0x10^{-3}$	1:1000000/1000	$10x10^{-7}$/$10x10^{-8}$ /$10x10^{-9}$	005	1/2/5/optional	Option
MTDA-020005	2000.0	$50.0x10^{-3}$ /$1.0x10^{-2}$	1:1000000/1000	$20x10^{-7}$/$20x10^{-8}$ /$20x10^{-9}$	001	1/2/5/optional	Option

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