# TRANSIENT TOSION ANALYZER & CONTROLLERS

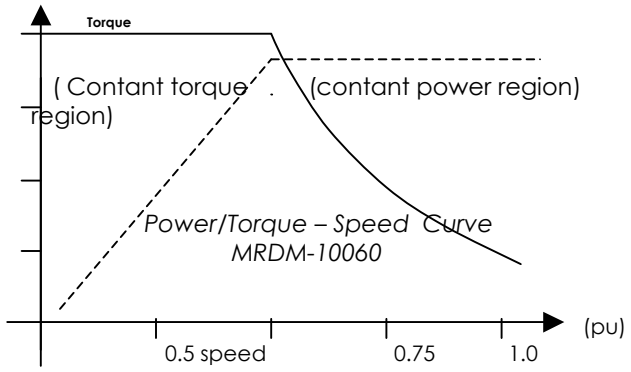
**(Swinging type/programmable)**

**Application:** MTDM series of low time constant transient Torsional analyzers are available in more than 10 different models (10-to1000 kilo watts/ 500 to50, 000 strain) including some tailor made models practically offering readymade solution in measurement, testing /diagnostic of any principal parameter like torque, strain and torque as well as other inferential parameter like rated power/torque capacity, overload power/ torque capacity, efficiency, plotting torque/speed and power/speed curve, desired phase trajectories of any torque transmission device( low/ high strain). These fast responding Torsional analyzers has ability to detect fast variation in engine parameters on account of its ultra low constant due to low mechanical time constant, windage losses,tribological problem, mechanical black-lash/ dead band, and exhibits a repeatable and hysteresis less Torque/Power vs rent characteristics which guarantees accurate identification of parameters during steady state/transient conditions

**Operating Principle:** These transient. Torsion analyzers can operate in both absorbing mode as well in motoring mode with smooth transition between each mode. While performing in regenerative mode, power is transferred into electricity main. with this type of torsion analyzers an infinitely variable load can be applied at constant speed or set to a constant load with a variable speed. It offers linear/stable torque/speed behaviour, especially at lower speed range with speed holding with in +0.1% of full speed. These torsional analyzers can also be used to estimate internal losses in engine while working in motoring mode Torque speed behaviour of torsion analyzers is as under……..

$$w = K_1.V/I_f - K_2.T/I^2_f$$

(Maximum torque varies between 0.3 lbs-ft to 1000.0 lbs-ft)
Feedback controlled power supply ensure fine resolution in loading i.e. 0.1% of torque/power at any time, with a very high degree of Stability and repeatability.




**Technical specifications of Torsion controller controller:**

Operating Power supply 220 volts/50 Hz
Excitation current 10-50 amps (max)
Torque pulsation 50 mili N.m- 1000N.m.
Strain: as in data sheet
Conversion frequency of chopper 50 Hz/50 kHz
Display Power/Torque/Speed (3-1/2 digit)
Control: cascade control (1.armature spees/current feed back) 0.25
Working in constant power/torque
Repeatability 100 percent
Response time 0.5 –1.1 mill-seconds
Accuracy of loading: 100%
Interface Signal 0.0-12.0 volts D.C. (proportional to power)
Control range (torque/spead) 0.0-100%
Step down ratio 0-100%
Display: Voltage/vurrent/power /RPM over load
Interface: RS-232

**Benefits:**

- Simple installation and operational compatibility.
- Consistent performance over large temperature range (80°C)
- Scaled directly in Volt/Ampere with repeatable accuracy.
- Auto zero offsets without drift with ultra high input impedance...
- Facility of programming profile of display in six steps/ RS-232 interface.

**Braking Torsion analyzers machine MRDC-20005**

**Technical specifications and selection chart (MTDM series) TORQUE<2000.0N.m.**

| Model | Rate Torq e m | N n excited Torque % R.T. | Sl AIN/ Oth r strain c tion | %A gular strain/ Tc sion mode | Cl arance Between Grips mm)/ Gri s for Round bars (mm)/ ips for flat bars (mm) | |
|---|---|---|---|---|---|---|
| MTI M150003 | 30,0 | 0.0 | 05 | Bi-dir tional/optional | 0-10 )/30-60/75 | |
| MTI M150003 | 15,0 | 0.0 | 05 | Bi-dre tional/optional | 0-10 )/20-50/75 | |
| MTI M150003 | 08,0 | 0.0 | 05 | Bi-dre tional/optional | 0-50 '10-30/60 | |
| MTI M150003 | 04,7 | 0.0 | 10 | Bi-dre tional/optional | 0-05 )/10-30/60 | |
| MTI M80005 | 01,9 | 0.0 | 20 | Bi-dre tional/optional | 0-05 )/10-30/50 | |
| MTI M75010 | 0071 | 0.0 | 60 | Bi-dre tional/optional | 0-05 )/08-25/50 | |
| MTI M50015 | 0031 | 0.0 | 60 | Bi-dre tional/optional | 0-03 )/08-25/40 | |
| MTI M25030 | 0079 | 0.0 | 20 | Bi-dre tional/optional | 0-03 )/06-20/30 | |
| MTI M10060 | 0016 | 0.0 | 20 | Bi-dre tional/optional | 0-02 )/06-20/30 | |
| MTI M50120 | 008.' | 0.0 | 20 | Bi-dre tional/optional | 0-02 )/06-20/20 | |
| MTI M20150 | 012.' | 0.0 | 00 | Bi-dre tional/optional | 0-01 )/04-08/15 | |

Last two numeral after MDCD indicates volt.x100 an remaining numeral indicates power (kilo-watts).Company may develop braking dynamom on specific requirement

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# A.C. TRANSIENT DYNAMOMETERS & CONTROLLERS

**(Swinging type/programmable)**

**MDCD010008**

**MDCD030008**

**Technical specifications and selection chart (MDCD series) P<2000.0 kilowatts**

| Model | Power (K W.) | Rated volt AC/DC (for m/c) | Non excited load % | Ampere AC/DC | Cooling Water/Air | Thermal rise °C (on hour) |
|---|---|---|---|---|---|---|
| MDCD150010 | 150 .0 | 000 | 0.0 | 500.0 | Liquid | .5 |
| MDCD100010 | 100 .0 | 000 | 0.0 | 000.0 | Liquid | .5 |
| MDCD075008 | 750 ) | 50.0 | 0.0 | 000.0 | Air | .5 |
| MDCD060008 | 600 ) | 4 0/800 | 0.0 | 150 .0/750. 0 | Air | .5 |
| MDCD030008 | 300 ) | 4 0/800 | 0.0 | 750 0/375.0 | Air | .5 |
| MDCD010008 | 100 ) | 4 0/800 | 0.0 | 250 0/125.0 | Air | .5 |
| MDCD005004 | 50.( | 400 | 0.0 | 25.0 | Air | .5 |
| MDCD002004 | 20.( | 400 | 0.0 | 50.0 | Air | .5 |
| MDCD001002 | 10.( | 200 | 0.0 | 50.0 | Air | .5 |
| MDCD000502 | 5.0 | 200 | 0.0 | 25.0 | Air | .5 |
| MDCD000202 | 2.0 | 1 0/200 | 0.0 | 20 0/10.0 | Air | .5 |
| MDCD000102 | 1.0 | 1 0/200 | 0.0 | 1 .0/5.0 | Air | .5 |
| MDCD000101 | 0.5 | 10 '20/50 | 0.0 | 50 '25/10 | Air | .5 |

Last two numeral after MDCD indicates volt.x100 an remaining numeral indicates power (kilo-watts).Company may develop electronic load tester on specific requirement.

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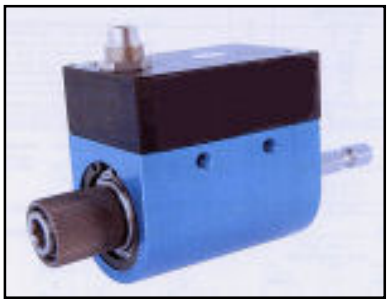
# A.C. TRANSIENT TORSIONAL ANALYZERS & CONTROLLERS

**Introduction:MLCTC** series of precisionpiezo/capacitive/inductive based column type torque sensors are available in (0.1 to 1000,000 kg), more than 20 different models virtually offering solution to torque measurement related to organic/inorganic chemical, heavy electrical/mechanica l industries, machine tools, non-conventional energy, solids state physics application and many uncountable defense/nuclear applications. Here strain gauge torque sensors convert the load acting on them into electrical signals. The gauges themselves are bonded onto a beam or structural member that deforms when weight is applied. In most cases, four strain gages are used to obtain maximum sensitivity and temperature compensation. Two of the gauges are usually in tension, and two in compression, and are wired with compensation adjustments. When weight is applied, the strain changes the electrical resistance of the gauges in proportion to the load. Other torque sensors are fading into obscurity, as strain gage torque sensors continue to increase their accuracy and lower their unit costs. Careful selection design topology ensures better controllability and reliability with additional integrated power/voltage and control/protection. Company offers tailor made solution to custom requirement.

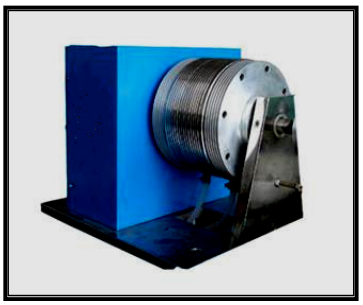
**Benefits:**

- Simple installation and operational compatibility.
- Consistent performance over large temperature range (80°C)
- Scaled directly in Volt/Ampere with repeatable accuracy.
- Auto zero offset without drift with ultra high input impedance...
- Facility of programming profile of display in six steps/ RS-232 interface.
- All standards din sizes and custom sizes.

**MSLC- 00020**



**MSLC- 00500**



**MSLC-00100**

| MODEL | Capacity [Kg.m] | O.D.1 m.m. | O.D.2 m.m. | m n. | Weight K.G | connector | Rod end Point | Metal |
|---|---|---|---|---|---|---|---|---|
| MSLC-00020 | 0000 5-0000 0 | 063. | 025 | 02 .0 | 2.6 | ption | RDB-1 | A.S. |
| MSLC-00100 | 0000 0-0010 0 | 075. | 025 | 02 .0 | 3.2 | ption | RDB-2 | A.S. |
| MSLC-00500 | 0020 -0050 0 | 080. | 060 | 02 .0 | 4.6 | ption | RDB-3 | A.S. |
| MSLC-01500 | 0075 -0150 0 | 140. | 065 | 02 .0 | 5.6 | ption | RDB-4 | A.S. |
| MSLC-05000 | 0020 0-0050 00 | 160. | 065 | 02 .0 | 7.8 | ption | RDB-4 | A.S. |

**Electrical/Mechanical specifications of Torque sensor** **Torque<0.050 to 50000.0 K.g.m**

## General specification of signal conditioner/monitor:

Operating voltage 220 volts/110volts A.C or 12 volts D.C.
Excitation current 0.0- 12 VOLTS/500 ma
Regulation better than 0.5 % of measurement
Accuracy 99.5% of set point
Repeatability 100 percent
Response time 0.05 –10.0 sec
Interface Signal 0.0-20.0 m.volts D.C. (proportional to force)
Step down ratio 1:100000
Display : 3/4/5/6 digit LED/LCDPM/Torque in 3½ & 4½ digit red glow LED/LCD display
Protection: Over/under voltage & with power on Indication

**General specification of Torque sensor:**

Capacity: 1, 5 20,50,100,200,1000,2000,3000,5000 and upto 900,000 Kg.m.
Rated o/p: 3 mv/V
Non linearity: 0.03%
Hystersis: 0.03%
Creep error: 0, 02%
Zero balance: 0.03%00
Compensated temp. Range: -20-80 °C .
Operating temperature:-20-80 °C
TCR: less than 0.1%
Protection class: IP65

**Five numerals x 10 after MSLC indicate power of load ell .Torque sensor with tailor specs are also available.Company offer tailor made software solution.**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